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Editorials.

THE ELECTION TO THE COUNCIL OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

THE election to the Council of the Royal College of Veterinary Surgeons, which has just taken place, is perhaps the most important one that has occurred for years. A full-pitched battle has been fought around the proposed new Bill, concerning which we have had so much to say on previous occasions. There were eight vacancies, for which sixteen candidates were nominated, half of whom were pledged supporters of the Bill, while the other half had definitely signified their intention, if returned, to do all in their power to cause a withdrawal of the whole scheme. Hence the issue was a straight and definite one. Had the latter party, or even a majority of them, been returned, it would have been a severe censure of the Council, and a clear indication that the latter did not possess the confidence of the profession on this burning question. We are exceedingly glad that such undesirable results were not obtained, and we are overjoyed to relate that the supporters of the Bill were returned by the most sweeping majority that could possibly happen. Not a single opponent of the Bill was elected, as may be seen by reference to another page of this issue, where the figures are given.

If ever a mandate has been given, the Council of the Royal College of Veterinary Surgeons can claim to have received one now, and only one thing remains to be done, namely, to proceed with all speed to present the Bill to Parliament at the earliest possible date. The draft Bill has been discussed and considered for several years now, and as a result the original has been improved by various amendments, while it may have been weakened to some

extent by others. In any case, it cannot be said to have been rushed without due consideration, and further hesitation is undesirable and unwarranted. The opponents to the Bill should now realize that the vast majority of the profession agree with the main points of the Bill, and if they have the true interests of the profession at heart, as we believe many of them to have, they will cease this form of opposition and devote the energies which they have shown themselves to possess to assisting their professional brethren to bring about the passage of the Bill, which, in the expressed opinion of the majority, is not only desirable but essential to the well-being of the profession.

Concerning the rejected candidates personally, we have nothing to say except in the case of one of their number, namely, Mr. J. S. Lloyd, who heads their list. Under other circumstances we should have heartily welcomed him to our council chamber, but his plainly worded election address was his undoing. He chose to stand or fall by his opposition to the Bill, and he has fallen. Mr. Lloyd has done perhaps more than any other member of the profession for the general good in matters of "veterinary public health." Municipal veterinary officers, as such, are not directly represented on the Council, and we are of opinion that Mr. Lloyd would have been able to do much to assist the Council concerning the volume of legislation which will probably be embarked upon in this connection in the near future. This legislation, which is foreshadowed by Mr. John Burns' "Pure Milk Bill," will require careful watching on the part of our Council to see that the legitimate work of veterinary surgeons is apportioned to them, and not to the medical officers of health. We feel sure that if the veterinary officers of health nominate a candidate for the Council to look after their interests at a future election, the majority of practitioners will vote for him. If Mr. Lloyd comes forward again, we hope it will be under such conditions, and we feel sure he would occupy a very prominent position amongst the successful candidates.

In the meantime, the Council has received its mandate, and must proceed with all dispatch to get the Bill passed into law.

THE NATIONAL VETERINARY ASSOCIATION.

THE annual meeting of the above Association for this year is to be held at Harrogate, on July 7, 8, and 9, under the Presidency of Mr. G. E. Bowman, of Leeds. The list of papers for discussion has been published, and some of the best-known members of the profession are down to provide the papers. Professor Macqueen is to present a paper on "Injuries of Tendons and Ligaments," Lieutenant-Colonel Appleton is to deal with "Our Horse Supply," Mr. Sydney Villar is to give us the benefit of his great experience of "Mallein and Tuberculin," and Mr. H. Sumner is to introduce the subject of "Auto-poisons." Surely an excellent programme!

Our opinion as to the usefulness of these meetings has been expressed on numerous previous occasions. In addition to the direct benefit derived by members from the papers and discussions on them, there is inestimable benefit resulting from the personal contact of practitioners from the various parts of the country. Knotty points are discussed informally, experiences are freely exchanged, and ideas broadened. As a result, both our clients, our patients, and we ourselves are the better. In addition to the professional advantages derived, there is that pleasant social intercourse such as is provided by no other means. Consequently we advise all our readers who possibly can do so to arrange their affairs so as to allow them to assemble in large numbers at that beautiful inland resort, Harrogate, in the early part of July.

General Articles.

SOME AFFECTIONS OF THE URINO-GENITAL TRACT ENCOUNTERED IN TOWN PRACTICE.

BY GUY SUTTON, F.R.C.V.S., KENSINGTON, W.

URINO-GENITAL diseases of the lower animals will probably never allow of specialization as in the case of human surgery, and the field is greatly restricted by the freedom of our patients from the usual venereal diseases of man; still the general practitioner in veterinary surgery very frequently meets with diseased conditions of this system, the disturbance they excite is considerable, although the early symptoms may be somewhat obscure.

The presence of calculi, either renal, cystic, or urethral, is always interesting, and probably of our patients the dog is the most frequent sufferer. In the horse renal calculi are comparatively rare, though some very fine specimens have from time to time been obtained in the London slaughterhouses. Cystic and urethral calculi are much more common, and offer more opportunities for surgical interference.

Since 1902 I have seen examples of this condition in both sexes, the following being typical;—

The owner, when questioned, stated the animal, a donkey gelding, had for some time urinated frequently, but in very small quantities, and for twenty-four hours before advice was sought it had passed from him in drops. The animal moved with difficulty, and when allowed to stand, did so with the hind-legs straddled far apart. For about 5 in. from the ischial arch the perineum was much swollen, and the urethra could be seen to stand out to the thickness of a cart rope. On digital examination this swelling was undoubtedly due to a calculus about the size of a large walnut, obstructing the urethra, and so damming the exit of urine. The donkey was exceedingly quiet, and with an injection of cocaine allowed an incision to be made directly on to the calculus, which could then be pressed out with the finger and thumb, being followed by a gush of urine from the over-distended bladder. The wound was not sutured, but dressed frequently with a chinosol lotion. After a week urine was passed normally through the penis, none escaping through the artificial opening, which was now closed by granulations. The animal was kept under observation for a month, but as after that the owner did not again report, the case was unfortunately lost sight of.

In the mare, the short, wide urethra offers far greater facilities for the successful removal of calculi without great surgical interference, and the extent to which a healthy urethra is capable of being dilated is astonishing.

Some few years ago, advice was asked as to the treatment of a cab-mare. She was frequently urinating, but unable to eject the stream clear of her thighs, which in consequence were much excoriated. The clitoris was persistently erected, and the labia slightly parted. When urinating she would strain violently, and sometimes emit a deep sigh. The mare was very quiet, and allowed her perineum and vulva to be freely handled. On passing the hand within the vagina a hard substance could be felt just within the bladder, and upon inserting a finger

through the urethra, the roughened surface of a calculus was unmistakable.

The same afternoon the mare was cast and chloroformed. After well lubricating the hands in warm oil, the urethral opening was stretched by inserting the fingers in the form of a cone; a soft metal table-spoon with its lips curved towards its concave surface, so as to make it both shorter and narrower, was now inserted, and passed beyond the stone. With the one hand exerting a gentle traction on the spoon, and the other fingers dilating the meatus, a calculus about the size of a hen's egg was extracted. The bladder was well douched with warm permanganate solution, the mare returning to work in three days.

In canine practice one is more frequently consulted on these matters, and in numerous *post-mortem* examinations on dogs the frequency of nephritis found in those that have reached pronounced old age is remarkable. I have frequently noticed that the actual cause of death in such cases is exhaustion, or toxæmia, manifested by a great depression, repeated vomiting, and complete anorexia. It is not suggested that these symptoms are by any means always fatal, but when seen in dogs of advanced age must be viewed with alarm, and are, I think, incapable of differentiation from the Stüttgart, or typhus, condition so frequently met with.

Autopsy generally reveals the stomach to be disproportionately larger, and the wall considerably thinner than normal. On examination, the viscus generally contains a small quantity of yellowish frothy mucus, often slightly streaked with blood. The mucous membrane towards the œsophagus is of a yellowish, grey tint, while in the right half it is generally more or less flushed and swollen, often hæmorrhagic, and drawn into deep rugæ. The kidneys are generally reduced in size and extremely hard in texture. Frequently the cortex is lobulated, being of a darker colour, giving it a mottled appearance. The capsule is non-adherent. Radial section will show the medulla to have encroached greatly upon the cortex, which is reduced to a very thin margin, and in one case I have seen the medullary rays extending to the capsule.

The hilus is generally of a healthy appearance, although in one case I was fortunate enough to discover two good specimens of renal calculi, the subject in this case being a comparatively young dog, aged 5. It is not improbable that the progressive and insidious character of renal inflammation may give rise to the distressing emesis which so frequently accompanies the end. The earlier symptoms of renal inflammation are obscure and generally overlooked, and no doubt many more would be diagnosed if systematic urine testing were carried out.

In one case I had the opportunity of watching a nephritis case for some months. The animal was a bulldog, aged 5, and for the last two years had been kept in a dark recess in a yard where he was frequently exposed to jets of steam from a boiler, a point of interest and in accordance with the views of a German veterinary surgeon who recently reported in the *Veterinary Record* that sunless surroundings seemed to be favourable to renal inflammation. Some few months before death the animal began to lose condition, and became dull and listless, acquiring an unthrifty appearance. The appetite remained fairly good, but vomition would occur immediately after taking a meal.

Pain appeared to be entirely absent; the dog would always respond to a caress, and his agility was never impaired. About three weeks prior to death the urine was tested with nitric acid, and by boiling gave a disc of albumen. The temperature during this time remained normal, but two days before death rose to 103 °F., when he became collapsed, and died within six hours. The autopsy showed a double nephritis, both kidneys containing soft calculi, about the size of a tic bean; the cortex had almost entirely disappeared, and the medullary rays had much increased in volume. The capsule was not adherent.

Calculi may be present in the bladder for a considerable time without giving rise to inconvenience, as the following history will show:—

In 1906 I was asked to see a large poodle which had some difficulty in urinating, sometimes being only able to discharge a few drops, while at others the stream would be full and continued for an unusually long time. On passing a catheter it was found to grate upon a calculus lodged behind the os penis, though a small-sized catheter could be made to pass without encountering the obstruction. Rectal examination was unsatisfactory, as in large breeds the finger is unable to thoroughly search the whole region. The treatment adopted was as follows:—The dog was placed upon his back, the penis withdrawn, and ½ grain of cocaine dissolved in 2 drachms of warm water injected by the aid of a hypodermic syringe attached to a catheter, the stream impinging directly on to that portion of the urethra known to contain the calculus. After five minutes interval a larger catheter and syringe were substituted, and a volume of warm boracic solution thrown against the calculus with considerable force, the desire being to carry the obstruction back into the bladder along the paralyzed urethra. I have reason to believe it succeeded.

In 1908 the dog was again brought for advice, his general condition had remained good, but for the last six weeks he had acquired the habit of squatting to urinate, and the passage of the catheter now encountered marked obstruction. The same procedure was again adopted, but only gave very temporary relief, the old symptoms soon recurring, the dog failing in condition and occasionally vomiting. Laparotomy was performed under chloroform, the bladder drawn through the wound and opened, and a large number of calculi (over 200), varying in size from a bean to a barley grain, were removed with a spoon. An injection of cocaine solution had previously been made into the urethra to overcome the normal involuntary contraction, and a large-sized cathether attached to a syringe was inserted into the urethra from the external meatus. Warm boric solution was by this means injected, whilst the interior of the bladder was kept exposed by holding the incision lips with forceps, the patient lying on its side. To my great delight injection reached the bladder with but little diminished force, and carried with it three small calculi which had been impacted in the urethra, and were now thrown by the jet of water through the bladder and on to the table. Such success was more than could be expected, and the catheter now passed without any suspicion of calculi. The bladder incision was sutured with Lembert's sutures, the external wound closed, a tight bandage and sterilized cotton-wool being placed over the wound. Here, I am

afraid, the technique was faulty, for it appeared to chafe, heat, and irritate, and on the third day the dog scratched the bandage off and licked the wound. He was fairly comfortable, urinated freely, but still crouched to do so. Every sixth hour he received 5 grains of urotropine. The fifth day he commenced to vomit, and became depressed. This continued until the seventh day when, on inspection, the wound was found to be moist, and the dog was destroyed by chloroform, as an undertaking had been given to the owner that the animal should not be allowed to suffer unnecessary pain. Autopsy performed immediately after death showed the external wound closed, but the union had not been primary, and there was a visible streak of soft pale-coloured tissue between the margins of the incision and on the peritoneal side, a small area surrounding the wound being slightly flushed. There was no excess of fluid in the peritoneal cavity, and the lining membrane was quite bright. The bladder was contracted to about the size of an egg, and had a perfectly normal appearance save for a linear thickening which marked the site of the incision; the union of the opposed peritoneal surfaces having taken place entirely hiding the sutures from view. The bladder contained about an eggcupful of dark-coloured, non-offensive urine; the mucous membrane appeared healthy, there were no calculi, nor was there any sabulus material. This was fairly gratifying, and I think the operation is worthy of repeating when an opportunity occurs.

Malignant growths in the bladder of the horse or dog are presumably infrequent, although they are occasionally met with. The thoroughbred stallion "Arrival" was a prolific sire until his 19th year, when he developed paralysis of the penis and incontinence of urine. Rectal examination revealed a tumour-like mass, almost filling the pelvis. Treatment was continued for twelve months, after which, as no improvement had occurred, he was destroyed. The autopsy was exceedingly interesting, as the whole urinary system had undergone marked changes. Both kidneys were from two to three times their normal size, very pale in colour and dropsical. The ureters stood out boldly, and were quite two-thirds of an inch in diameter with much thickened walls. The bladder had the appearance of a greyish white ovoid mass, about 20 in. by 10 in. in size. On section the wall was from 4 in. to 6 in. in thickness, firm externally, and softening towards the centre, and the cavity had a capacity of about one quart, and contained some dark-coloured, foul-smelling urine; the mucous membrane was thrown into ridges with corresponding depressions. The prostrate gland was enlarged, but not cystic, and accounted for the tumour-like mass found on rectal exploration. The diseased viscera were sent to Professor Mettam, who kindly examined them and reported the thickening of the bladder wall to be carcinomatous, and the dilation of the ureters and kidneys to be due to "back pressure." Enquiries were made as to the subsequent history of this animal's later progeny, without any evidence being obtained as to heredity of the complaint. As the change in the ownership of young animals is frequent, and carcinoma generally develops in the second half of life, there is little opportunity of collecting much evidence of its hereditary character.

A second case of a similar nature, but of a more restricted growth, was of an aged cart gelding. When advice was asked he was about

sixteen years old, and up till then had enjoyed excellent health during his whole working career. During the previous four months he had steadily lost condition, and occasionally suffered from abdominal pains, which were attributed to indigestion, and for which he received treatment. About this time the driver called attention to the frequent micturitions, which were the more noticeable as formerly he had been disinclined to stale while between the shafts, whereas now he would stop in the street while drawing a load to do so, and occasionally would discharge clots of blood with the stream. The urine was frequently blood-stained, and generally more than usually turbid. Rectal examination was negative, as was the passage of the catheter, with the exception of withdrawing some thick, deeply-coloured urine. A diagnosis of tumour within the bladder was made, and a guarded prognosis given. The horse was rested and treated for a month, receiving urinary sedatives and disinfectants by the mouth, and having the bladder washed out with solutions of boric acid by means of a Reid's pump and catheter. No improvement took place, and after some weeks the owner decided on destruction. On *post-mortem* examination a growth of about 10 in. in circumference was found growing from the mucous membrane of the bladder at the fundus; its surface was flattened, of a reddish colour, and had undoubtedly accounted for the hæmorrhage during life. No distinctly metastatic tumours were seen, but the lumbo-sacral glands were much enlarged, and the bladder and growth were seen by Sir John M'Fadyean, who reported the latter to be a carcinoma.

Within the last four months a well-known West End horse dealer has had four animals attacked with localized paralysis, possibly arising from infected forage. One case clearly comes within the scope of this paper, although I can offer no views on its pathology or causation.

The subject—a chestnut hackney gelding, aged 5—was noticed by the helper to move the hind limbs with difficulty. On closer inspection it was seen that the upper lip was drawn to one side, the off ear drawn downwards and backwards, and the tail carried around to the near side. With difficulty he was made to walk into a box littered with peat moss. All the limbs were somewhat stiff, and when pushed sideways the animal had to make a decided effort to maintain his balance. He was able to lie down, but required assistance to rise. Whilst on the ground urine would slowly trickle away without any pronounced effort. It is, of course, possible that this arose from his inability to stretch his legs and urinate in the usual way while standing. Recovery took about four weeks, the paralyzed portion of the lip being the last symptom to disappear. Throughout the attack the temperature, pulse, respirations, and appetite were quite normal, the bowels slightly costive. Night and morning he received hypodermically ½ grain doses of strychnine, and also 2 drachms of potassium iodide, with 3 oz. of magnesium sulphate, in the food.

Probably anatomical differences in structure protect the stallion to a large extent from the inconvenience of prostatic disease, for even in those countries where castration is not so commonly practised as with us little occurrence has been reported. In the dog, where the prostate almost encircles the urethra, cases of pain arising from an enlargement of the gland are fairly frequent, the increased size being associated with advanced age.

Instances have been seen in which actual abscesses have occurred. In one, a Yorkshire terrier, the cavity contained about an egg-spoonful of most offensive pus, but in this case calculi were found in the bladder, and the patient had been repeatedly catheterized; perhaps this latter accounted for the cystic inflammation.

That enlargements of the prostate does not always give rise to marked inconvenience, I have recently had evidence; for on making

A and B, Testicles; C, prostate; D, bladder.

a *post-mortem* examination on a Scotch terrier, aged 10, who had suffered from pulmonary tubercule, and whose owner had observed nothing irregular in his micturitions, a cyst about the size of a Tangerine orange was found growing from the prostrate gland, and an illustration showing the relative size is here shown.

At the present time the veterinary practitioner is frequently asked to inspect valuable dogs prior to purchase, and the presence of small

herniæ may easily be overlooked, and in the bitch, where the hernial sac often contains a portion of the uterine horn, it is of the utmost importance, for in the event of pregnancy serious complications are apt to occur.

On two occasions I have noticed that unilateral herniæ have been reduced in size as pregnancy advanced. Probably the explanation is that no embryos passed the abdominal ring, but their presence and increasing weight in the uterus exerted traction on the herniated portion and drew it within the abdomen. In one case a pregnant fox terrier bitch was brought for inspection with a large inguinal hernia, which presumably contained a fœtus. The owner refused consent to an operation, and was warned to expect a difficult parturition. Strange to say, this passed off without assistance, and after delivery the hernia was much reduced. It is inconceivable to suppose a fœtus at term passed through the abdominal ring, and I am inclined to think the hernial sac contained omentum, which returned to the abdomen when the intra-abdominal pressure was diminished after parturition.

Dystokia occurred in a French bull bitch, where not only were the fœtuses disproportionate, but a large inguinal hernia undoubtedly contained a live puppy. Attempts at delivery by the vagina proved useless, and the bitch being of great value to her owner, every effort was made to save her life. The abdomen was opened in the median line, and by pulling on the uterus with the right hand and manipulating the hernial sac with the left, the hernia was with great difficulty reduced. Efforts were again unsuccessfully made to expel the fœtuses, but eventually the whole uterus with its contents was removed by Porrow's operation. The hernial ring was left unsutured, as the operation had already lasted some time. The bitch survived for two years, and though the hernia returned, the owner declined to again submit her to operation.

Inguinal herniæ are far more commonly met with in bitches than in dogs, whereas, I believe the reverse is the case in the human subject, and it is somewhat difficult to see why the abdominal rings should so readily give way in the bitch. In human surgery, cystocele is not uncommon, and frequently complicates the malformations of hermaphrodites.

Senile endometritis in the bitch has recently excited some correspondence in the professional journals. In some cases diagnosis is comparatively easy, the discharge being profuse, and manual examination through the flanks revealing the enlarged and thickened uterine horn. The os is dilated, sounds are readily passed, and irrigation can be efficiently carried out. In other cases the discharge is scanty, the vagina will not allow the passage of even a fine probe, and the abdomen is tense and too distended to allow of a satisfactory examination.

On two occasions within the last year bitches died suddenly, when in this condition, their owners having viewed their increasing bulk as a sign of pregnancy, and regarded the occasional emesis as due to stomach disorder. Both bitches were maiden chows, and the conditions found on *post-mortem* examination identical. The uterine horns were about 4 in. in diameter, and contained a thick, creamy liquid, with flocculi of semi-solid material floating in it. The quantity of fluid was approximately the same in either case, and in the

second was measured to be 1 gallon. In both the os uteri were firmly closed, and even with dissection it required considerable force and manipulation to insert a small metal probe. Sir John M'Fadyean has made some investigations in this disease, and asserts the causal organism to be a streptococcus, death resulting from toxæmia.

In both the above instances, it is evident that nothing short of complete hysterectomy could have saved the patients' lives. When treatment by douching is carried out much benefit is derived from the oxygen liberated from permanganate solutions, and recently it has been shown that the same good results may be obtained by injecting directly into the uterine horn pure, freshly generated ozone as advocated by Dr. Stoker.

Inability to evacuate the bladder, due to curvature of the spine, is somewhat rare, but on two occasions I have been asked to see bull puppies suffering from strangury. They were both males, about 6 weeks old, with marked lateral curvature in the lumbo-sacral region. The owners complained that the puppies for the last fortnight had been constantly whining and much distended, and that urine, which dripped from the prepuce, caused the under part of the abdomen and inner side of the thighs to be excoriated. These puppies were in no way related, but their history and conditions were very similar. Until they were a month old, no abnormality was noticed. When the puppies began to walk and for many hours in the day assumed a horizontal position, the distressing conditions occurred. In both cases laparotomy was performed, and the cause of the obstruction to the urination seemed to be entirely due to the abnormal relationship between the bladder and lower bowel, the former when distended being pushed on one side, thus constricting the neck. When the bladder was placed in a central position it immediately became evacuated. In the second case the bladder was sutured to the abdominal wall, but in both instances recurrences of the symptoms quickly followed, and the puppies were destroyed, a bull-dog with marked lateral curvature not being a desirable possession.

LYMPHATIC GLANDS OF THE OX.

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In view of the increasing importance of the ox in veterinary practice, a contribution to the study of the lymphatic glands should prove of some interest to the veterinary surgeon. Some of these glands are frequently the subject of disease, more particularly in tuberculosis and actinomycosis. A few of them are superficial and may be felt in the living animal, so that their condition may be ascertained. In meat inspection it is often absolutely necessary to examine these glands for traces of infection, because they may be the only organs left attached in the carcase from which any information may be obtained, and also because in some cases of tuberculosis they are the only organs affected. It is therefore necessary in the first instance to understand the position, size, and appearance of the normal glands

before one can proceed to study or search for any abnormalities in connection with them. Too often the knowledge of the lymphatic system is taken from equine anatomy, and no attention paid to what occurs in the ox. No doubt the arrangement of the glands is in many respects similar, but there are differences in size and position of the glands and groups of glands which ought to be familiar to the expert. In this article I desire to draw attention to the position of the many groups of lymphatic glands and the average size of the latter. These glands are in many cases much larger than those of the horse, and the groups in some cases placed in rather different situations. Their situations should be known, so that no difficulty may be felt in finding them at a *post-mortem* examination, even in a fat subject, and in the case of the superficial glands ascertaining their condition in the living animal. The size of the glands varies to a certain extent in individuals; normally, they decrease in size with age; but for practical purposes this latter point need not be too much emphasized, as the average length of life of the bovine is short. The sizes given are taken from animals one to three years old.

Among the usual lymphatic glands in the body are found small red or black bodies, varying in size from a mustard seed to a pea. These are the so-called hæmal or hæmolymph glands. Histologically they differ chiefly from the lymphatic glands in that the lymph channel is converted into a blood channel or even a blood sinus. In the latter case the hæmal gland may appear to be little more than a speck of blood. Many of these I have noted in connection with the lymphatic glands.

In some future article I hope to deal with another part of the lymphatic system—the lymph vessels and their communications—and refer to some points in connection with certain infections, which are rather at variance with the accepted views on the direction and course of the lymph and chyle in this system of vessels.

Lymphatic Glands of the Head and Neck on either Side.[1]

(1) *The Submaxillary Lymphatic Glands* are two in number. They lie under the sternal band of the panniculus, behind the angle of the inferior maxilla, and about 2 in. above where the submaxillary vessels cross the hinder border of that bone. One of the glands is about 1¼ in. in diameter, ovoid in shape, and placed immediately behind the submaxillary vein. The other is about the size of a hazel nut, and lies between the latter vein and the parotid gland. Frequently a small hæmolymph gland lies near the smaller lymph gland. This group can only be felt in the living animal in good or fair condition when the glands are very much enlarged.

(2) *The Subparotid Lymphatic Gland* is single and imbedded in the parotid salivary gland. It is placed directly above the vertical ramus, about 4 in. in front of the angle and 1 in. behind the temporo-maxillary joint. It is flattened laterally, nearly 3 in. long, and from ½ to 1 in. broad. The lower portion only of the gland is on a level with the outer surface of the parotid salivary gland.

(3) *Pharyngeal Lymphatic Glands.*—(*a*) The retropharyngeal gland is

[1] In the following description the long axis of the skull is considered in the vertical position.

a single large gland, placed to the inner side of the ramus, under the great cornu, in front and above the side of the pharynx, behind the styloid process of the petrous temporal bone. It is about 1¾ in. long, 1¼ in. broad, and over ½ in. thick. It cannot be felt in the living animal from the outside. It may, however, become enlarged in tuberculosis and actinomycosis and cause snoring in cattle. In examining for this gland in the carcase, the ramus of the lower jaw must either be removed or the whole of the structures in the intermaxillary space excised and the gland looked for above the soft palate in front of the pharynx. (*b*) The subatlantoid gland (ganglion sous-atloidien) lies under the parotid and submaxillary salivary glands immediately below the most prominent portion of the wing of the atlas, and above the cricoid cartilage of the larynx. It has the shape of a large haricot bean, and is flattened from side to side. It is about 1¼ in. broad and 1½ in. long. Its condition may be ascertained in the living animal which is poor in condition, by manipulating with the point of the finger under the wing of the atlas.

[Tonsils are developed in the ox. Each attains a size of about a walnut at the side of the soft palate between the anterior and posterior pillars in front of the great cornu of the hyoid bone. A large crypt opens into it on its inner side.]

The Cervical Glands consist of a chain of about eleven glands, extending backwards near the upper aspect of the trachea from the pharynx to the entrance to the thorax. The first three glands, each about the size of a pea, lie to the inner side of the subatlantoid gland. The others vary in size from a pea to a hazel nut. Several hæmolymph glands (about four in number) are developed along the course of this chain. Dealing with the retropharyngeal and cervical glands, Moussu (*Traité des maladies du Bétail*) says: Normally these glands cannot be examined, but when they are the subject of certain infections their hypertrophy may be so great as to be noted by simple observation. The larynx and pharynx may be depressed, the depression at the attachment of head and neck disappear as well as the longitudinal depression of the jugular furrow. These deformities may be perfectly symmetrical (as in leucocythæmia) or more commonly asymmetrical, as in tuberculosis, and if inspection be not sufficient for a diagnosis, palpation may complete the evidence.

The Prescapular Lymphatic Glands are placed on the line of separation between neck and shoulder, underneath the mastoido-humeralis muscle. There are five glands in all. One, much the largest, has the shape and size of two or three fingers put together. It is vertically elongated and about 3 in. long and 1 in. thick. Its lowest point lies about 4 in. above the external tuberosity of the humerus. A string of five small pea-like glands extends upwards from it for a distance of about 4 in. Four of these small glands are hæmolymph. The chief gland of this group may easily be felt in the living animal when it is enlarged in tuberculosis or by metastatic new growths.

Lymphatic Glands of the Forelimb.

Brachial Gland.—There is no group corresponding with the lower group of brachial lymphatic glands in the horse. A single-rounded gland, about 1¼ in. long and ¾ in. broad, lies behind the brachial

vessels and musculo-spiral nerve over the teres major, almost in the angle of separation of the humerus and scapula.

Lymphatic Glands of the Thorax.

Prepectoral Lymphatic Glands (sometimes called *Axillary*).—About eleven glands constitute this group. One of these lies over the serratus magnus muscle, opposite the second rib, a little above and in front of the brachial gland. Four lie on the outer side and in front of the first rib near the axillary vessels, two under the arteria innominata, two under the vertebral artery at the side of the trachea, and one under the trachea in front of the chest. They are all ovoid in shape, and vary in size from a pea to a filbert nut.

The Dorsal or Intercostal Lymphatic Glands are placed in connection with the intercostal spaces. A single gland, varying in size from a barley grain to a pea, lies at the upper extremity of each intercostal space at the side of the body of the dorsal vertebra, and usually immediately above the dorsal cord of the sympathetic. These glands are very irregular in size, and in some spaces absent. In a recent specimen examined the lymphatic glands were absent in the second, sixth, and twelfth intercostal spaces. In the eighth intercostal space there were two small glands.

The Aortic Lymphatic Glands consist of a chain of some seven glands, both on the right and left sides, above the posterior aorta, underneath the dorsal vertebræ. These glands lie between the aortic intercostal arteries. They vary in size from a barley grain to a bean. The largest of all this group on the right side is placed over the arch of the aorta and over the œsophagus, above the heart and in front of the first aortic intercostal artery. It is elongated from before to behind, about 2 in. long and ¾ in. broad. On the left side the two largest are finger-like in shape and about 1¼ in. long, and are placed opposite the eighth and eleventh intercostal spaces. Two small hæmolymph glands may be noted on the left side of the arch of the aorta immediately below this group.

The Tracheal or Cardiac Lymphatic Glands are found in the anterior mediastinum. Five glands, the largest about the size of a horse-bean, form a chain on the right side, under the trachea from the heart to the prepectoral group. On the left side one, about the size of a hazel nut, is placed under the anterior aorta in front of the heart; two, about the size of peas, in the angle between the anterior and posterior aorta; and another, about the same size, at the side of the trachea above the left axillary artery. One or two hæmal glands are sometimes noted among this group.

Bronchial Lymphatic Glands.—(1) The right bronchial glands consist of: (*a*) A group of two glands over the third bronchus, at the side of the trachea, over the anterior extremity of the base of the heart. The smaller gland is about the size of a barley grain, the larger one about the size of a filbert nut, about 1¼ in. by ¾ in.: (*b*) A group of two glands, about the size of peas, on the inner side of the right bronchus.

(2) Left bronchial glands are three in number at the root of the left lung. Two of these lie to the outer side of the left bronchus, behind the arch of the posterior aorta, above the pulmonary artery and heart, and to the inner side of the vena azygos. One of these is about the

size of a pea, the other flattened and about 1½ in. long by ¾ in. at its broadest point. Near the latter a hæmolymph gland may be found. A third gland, about the size of a hazel nut, is situated between the left bronchus and the lower aspect of the œsophagus. It may be accompanied by two very small hæmal glands.

The Mediastinal Glands form a single chain immediately over the œsophagus under the posterior aorta in the posterior mediastinum. The largest of these glands is the most posterior, being placed immediately in front of the diaphragm. It is elongated from before to behind, slightly flattened from side to side, finger-like in shape, sometimes bifurcate posteriorly, about 5 in. long and 1 in. broad near its middle. In front of this there are three glands varying in size from a pea to a small bean. The largest of these latter lies just behind the arch of posterior aorta. The most posterior mediastinal gland is sometimes so much enlarged in tuberculosis as to press on the œsophagus preventing regurgitation of gases formed in the rumen and causing intermittent or chronic tympany.

The Suprasternal Glands consist of: (1) Two small glands about size of peas, in the mass of fat in front of the diaphragm behind the heart and above sternum. These are usually accompanied by two small hæmal glands.

(2) A chain of three or four small glands, varying in size from a barley grain to a pea, along the outside of the internal thoracic vessels under the triangularis sterni muscle and over the sternal costal cartilages. These glands lie one at the lower extremity of each of the second, third, fourth, and fifth intercostal spaces. To expose these glands the muscle should be cut through near its insertion into the ribs.

(3) One gland, about the size of a hazel nut, to the inner side of the internal thoracic vessels, over the second costal cartilage. From the latter gland a chain of three pea-like glands extend upwards within the first rib in front of the internal thoracic artery to join the prepectoral group.

Lymphatic Glands of the Abdomen.

The Superficial Inguinal Gland of the Bull or Bullock is single, placed near the inner commissure of the external abdominal ring. It is flattened and oval in shape, and about 1 in. long by ¾ in. broad.

The Supramammary Gland of the Cow is also single, and lies about the same point as the identical gland in the bull, above and towards the outer side of the hindquarter of the udder. It is flattened from above to below, and rather larger than half-a-crown in diameter. It may be felt in the living animal when enlarged, as in some cases of tuberculosis, by manipulating the upper aspect of the udder from behind.

The Lymphatic Glands of the Flank (ganglia du creux du flane) form a group of about four to six glands on the outer side of the external abdominal oblique muscle from 2 to 3 in. behind the last rib. The lower two are the largest and about the size of small beans, situated from 3 to 4 in. below the transverse processes of the lumbar vertebræ. The other glands of this group are exceedingly small. It is only exceptionally that these glands are enlarged to such an extent as to be appreciable in the living animal.

The Iliac Lymphatic Glands are two in number, the one about a hazel nut in size, the other slightly smaller, on the inner side of the external angle of the ilium, in the fat near the angle of bifurcation of the circumflex iliac artery. Two small hæmolymph glands are frequently found in the neighbourhood.

The Sublumbar Lymphatic Glands consist of: (1) A large flattened gland, slightly elongated vertically, about ½ in. thick, and about the diameter of a crown piece. It lies immediately in front of the external iliac artery at the side of the entrance to the pelvis about 1 in. behind the iliac glands. The internal abdominal ring is directly below it. It probably takes the place of the deep inguinal lymphatic glands of the horse.

(2) Sacral glands one or two in number, about size of hazel nut, in angle of separation of the two internal iliac arteries.

(3) External iliac glands, a string of three or four small glands, one only being as large as a hazel nut, in the angle of separation between the external and internal iliac arteries of the same side.

(4) Lumbar glands, a chain of about fifteen to twenty, of which only one averages a haricot bean in size, the others being about the size of a split pea, running forwards from the external iliac artery along the side of the posterior aorta as far as the kidneys.

The Renal Lymphatic Gland is single, and about the size of a filbert nut, situated in the hilus of the kidney.

The Portal Lymphatic Glands are arranged in (1) a group of three, between a hazel nut and walnut in size, at the portal fissure of the liver. (2) a group of seven much smaller pea-like nodules, placed higher up nearer the origin of the cœliac axis.

Lymphatic Glands of the Rumen.—On the upper aspect along the course of the superior artery of the rumen near the superior median fissure, a chain of some eight glands, varying in size from a pea to a hazel nut, is placed. Six glands, the largest about 1 in. in diameter, are scattered irregularly over the area of attachment of the rumen to the roof of the abdomen. These latter glands are the only ones found near the spleen, One small gland about the size of a pea is interposed between the two anterior conical cysts, and a last gland about the size of a hazel nut over the left cyst, in the course of the artery to the under aspect of the omasum.

The Lymphatic Glands of the Recticulum form a chain of nine, along the upper aspect of that sac, along the course of its superior artery. These glands vary in size from a barley grain to a pea. Two small hæmolymph glands may be found among this group. A group of five glands, the largest about the size of a hazel nut, is situated at the point of contact of the reticulum, the lower curvature of omasum and abomasum.

The Lymphatic Glands of the Omasum form a chain of twelve glands, the five largest of which are the size of a hazel nut, across the upper aspect of the omasum in the course of the superior artery.

The Lymphatic Glands of the Abomasum consist of: (1) A chain of five glands along the inferior border of the abomasum at the attachment of the great omentum, and in the course of the inferior artery of the abomasum. Four of these attain about the size of large kidney beans, and are placed near the base of this organ; the fifth, the smallest, is situated near the pylorus.

(2) A chain of five glands, varying in size from a pea to a walnut, along the upper border of the abomasum in a fold of peritoneum.

Mesenteric Glands.—About forty small glands, about the size of a barley grain, many of them hæmolymph, are scattered in the great mesentery along the course of the primary branches of the anterior mesenteric artery. The largest and most important glands of the small intestines lie in a chain immediately above these bowels from duodenum to last portion of ileum in the mesentery. Of these there are about thirty-four in all, and over the anterior portion of the intestines they form a double chain. Thirteen of them are long, finger-like glands, varying from 2 to 7 in. in length, and about ½ to 1 in. broad. The remaining glands vary from a bean to a walnut in size.

The Cæcal Lymph Glands are two in number, each about the size of a walnut, one on a level with the ileocæcal valve, the other immediately above it. A hæmolymph gland, about the size of a barley grain, may be met with near the apex of the cæcum.

The Colic Lymph Glands lie for the most part scattered in the great mesentery between the spiral folds of the colon. Here they are about sixteen in number, varying in size from a pea to a hazel nut. Along the upper border of the last portion of the colon, at its attachment to the root of the abdomen, a chain of some six or seven pea-like glands is formed.

Lymphatic Glands of the Pelvis.

The Coccygeal or Anal Gland is single and about the size of a kidney bean. It is placed over the rectum in front of the sphincter ani, under the coccygeal vertebræ, immediately to the inner side of the tuber ischii.

The Lymphatic Glands of the Rectum are arranged in a chain of about sixteen glands, none larger than a pea, from the coccygeal gland forward above the rectum to join the group over the colon. Among them are to be seen four or five hæmolymph glands. Two hæmolymphs may be noted also near the urethra to the inner side of the sacrosciatic ligament. Two small lymphatic glands, about the size of a pea, lie behind the sacroiliac joint on the inner side of the ilium.

Lymphatic Glands of the Hind Limb.

There are no deep inguinal glands in the ox.

The Popliteal Gland is single and about the size of walnut, 1½ in. long by 1 in. broad. It is deeply placed between the semi-membranosus and biceps femoris, above the gastrocnemius, behind the stifle joint on a level with the stifle. This gland is most conveniently exposed by cutting transversely through the biceps on a level with the patella. The gland will be found in a mass of fat under that muscle.

The Precrural Gland is a single vertically elongated, finger-like gland, about 3 in. long and ½ to 1 in. broad. It lies immediately in front of the tensor vaginæ femoris at the junction of the thigh and flank, a little below midway between the external angle of the ilium and patella. (In one specimen examined the lower extremity lay about 6 in. above the patella, and the upper extremity about 7 in. below the external angle of the ilium.) This gland can, save when the animal is very fat, be felt in the fold of the thigh.

The Ischiatic Gland is deeply placed under the origin of the biceps

femoris, about 3 in. in front of the tuber ischii, on the outer side of the sacrosciatic ligament immediately above the ischium. It is about the size of a kidney bean, being nearly 1¼ in. in diameter. Another small gland about the size of a pea is placed under the middle glutens on the sacrosciatic ligament just behind the great sacrosciatic foramen.

INSPECTION OF FOREIGN MEAT.

Some years ago the Netherlands Department of Agriculture arranged a special system of inspection of meat intended for export from Holland to Great Britain and other countries. The services of Government veterinary inspectors were made available at the slaughter-houses concerned, a code of regulations was drawn up to guide inspectors as to condemnation, and an official label with an identification number was attached by a lead seal to each carcass which passed the inspector. The system was enquired into by the Local Government Board, and recognition was given to the official label in the regulations made by that Department last year on the subject of foreign meat.

The Dutch exporter whose animal was condemned by the inspector in Holland could, however, still send it to the British market without the official label, and in the case of pigs, which are mainly in question, many of the carcases brought into British ports have in the past been uncertified. It is satisfactory, therefore, that the Netherlands authorities have now taken the further step of extending their meat inspection laws, so as to provide that no fresh meat intended for export to the United Kingdom is in future to be shipped unless it has been inspected and officially marked as being in sound condition and free from disease. In the case of pork the term disease is understood to include tuberculosis in any degree.

The Local Government Board has now issued a circular to port sanitary authorities ("Foreign Meat," No. 4, of April 29) notifying this change in the system of Dutch "official certification." The circular also deals with other matters relating to inspection of imported meat. Attention is drawn to frozen livers, kidneys, plucks, and other organs which are frequently imported in masses moulded to the shape of the box or bag containing them. The port sanitary authorities in London and elsewhere have recently caused samples of these packages to be thawed out, and have in several cases found their contents objectionable on account of the presence of disease or of decomposition in the centre of the mass. The circular insists on the necessity of the individual organs being separately frozen in the country of origin, and arriving in such a way that on opening the package the organs retain their natural shape, and permit of individual examination. Separate freezing of small organs like sheeps' kidneys can be dispensed with only if the kidneys are packed in shallow boxes so that the frozen contents consist of not more than two layers of kidneys not tightly pressed together. In the case of packages containing frozen livers and lungs or "plucks," the circular states that it is specially desirable with a view to detection of disease conditions that the ordinary examination made of a consignment at the port of entry should com-

prise thawing out specimen boxes, even when the organs have been separately frozen.

In the *Lancet* of February 13, p. 475, we laid stress on the need for strictly applying the powers of the Food Regulations Act so as to stop the importation of this highly perishable form of meat in large frozen masses which are incapable of inspection or examination. It is satisfactory to find from this circular that the Local Government Board has decided that all frozen "offal" must in future be imported in such a way that its suitability for food can be ascertained when it arrives at British ports.

(*Lancet.*)

HISTORICAL SKETCH OF THE DISCOVERY OF THE CIRCULATION.

BY SURGEON-CAPTAIN ROBERT SAMUT, 1ST KING'S OWN MALTA REGIMENT.

FEW subjects have passed through so many phases in their evolution as that of the circulation of the blood, and the controversy about its discovery has been so keen that to this day the claims of Harvey are disputed. Yet it was William Harvey who, unbiased by the teaching of the ancients, first placed the doctrine of the circulation of the blood on those firm foundations which his enemies and detractors have failed to shake, and which more recent methods and careful experiments have helped to consolidate.

In the middle of the sixteenth century we find that the Galenical conception of the circulation was still generally accepted. None then ventured to deny that the left side of the heart and the arteries contained blood mixed with air, and that the septum of the heart was pierced with innumerable but invisible pores, through which the blood returning from the liver found its way from the right to the left ventricle. This doctrine, which, like the rest of Galen's teaching, was upheld as infallible, was not questioned till 1543, when Vesalius demonstrated the impermeability of the septum, and ten years later Michael Reves or Servete, the Spanish philosopher, completely overthrew the oracle by asserting that the blood is conveyed by an admirable contrivance from the right ventricle of the heart through the substance of the lungs, a theory which cost him his life, for he was burnt as a heretic at Geneva a few months after the publication of his "Christianismi Restitutio."

Though taught by Servete, a complete account of the pulmonary circulation was first published in Venice in 1559 by Realdus Columbus: "For the blood is carried to the lungs by the arterial vein, and here becomes lighter; then, along with the air, it is carried by the arterial vein to the left ventricle of the heart." Here again the truth about the circulation was obscured by the same error, since, in the words of Professor W. Osler, the heart was looked upon as "a lump which is furnished with oil by the blood, and with air from the lungs." Nor can it be said that the problem was solved by Andreas Cæsalpinus of Arezzo, who, in 1571, discovered that arteries beat and that veins do not, that the blood reaches the heart by the veins and leaves it by the

arteries, and that ligature of a vein causes it to collapse between the ligature and the heart and to swell beyond the ligature (figure from "De Motu Cordis"). With Aristotle he maintained that the blood flowed like the tides of Euripus, backwards and forwards in the same channel, viz., from the arteries into the veins during sleep, and back into the arteries during the hours of activity. Upon him the honours of discovery are conferred by the Italian School (Luciani-Fisiologia dell'uomo, chap. vi., pp. 138-147). Nevertheless, ten years later Fabricius ab Aquapendente maintained that the blood flowed from the heart to the extremities even in the veins; this, then, is incontestable proof of the ignorance of the true facts connected with the circulation at the beginning of the seventeenth century. Professor Osler is, therefore, correct in saying that Cæsalpinus had Hippocratic glimmerings of the greater circulation, but was pervaded with the general spirit of the time, and saw darkly through Galenical glasses. It has been rightly said that the title of discoverer is due to him alone who can prove his theory, and in the matter of the circulation of the blood this was reserved for the pupil of Fabricius. Nothing but a loose collection of facts, the outcome of the earnest researches of the Italian masters, true pioneers of this discovery, had accumulated when Harvey graduated at Padua in 1602. With these at his command, and with the acute discernment of his great mind, he was able to give to the world the doctrine which must ever stand as one of the great turning-points in the development of human knowledge.

William Harvey delivered his second Lumleian lecture on the circulation of the blood at the Physicians' College, London, on April 17, 1616. Twelve years later he published his work, "De Motu Cordis et Sanguinis in Animalibus," and his absolute conviction that his conception of the circulation was original is made evident in the eighth chapter, in the following passage: "The things that remain to be said, though well worth considering, are so new and strange that I not only fear harm from the envy of certain men, but am afraid that I make all men my enemies; for custom or a doctrine, having once taken deep root, like second nature, hold their ground among all men, and reverence for antiquity binds them down. Be that as it may, the die is now cast, my hope is in the love of truth and in the sincerity of learned minds."

No fact of any consequence has been added to the subject since the publication of Harvey's work, nor can a single word of his great enunciation be altered: "That the blood flows into all the members of the body through the arteries and outflows through the veins; that the arteries are the vessels carrying blood from the heart, and the veins are the vessels and the ways for the blood's return to the heart, that the blood in the members and extremities, either by direct anastomosis or indirectly through the pores of the flesh, or in both ways, flows into the veins from the arteries just as in the thorax in floweth from the veins into the heart and arteries; hence it is evident that it moves in a circle, namely, from the centre to the extremities, and from these again to the centre."

Thus, whilst others groped in the uncertain light of their knowledge in search of the true course of the blood, the genius of Harvey shed such "a flood of light" on the subject that the great truth was at length revealed in all its beauty, so that none can ever question the

justice of Albert v. Haller's words: "Circuitus sanguinis Harvei famam immortalem fecit" ("Elementa Physiologiæ corporis humani, 1757).

(*Journal of the Royal Army Medical Corps.*)

CHICKEN-POX, FOWL-POX, OR SORE HEAD (EPITHELIOMA CONTAGIOSUM).

BY WALTER JOWETT, F.R.C.V.S., D.V.H.

EPITHELIOMA contagiosum, otherwise known as avian variola, fowl-pox, chicken-pox (from its supposed resemblance to small-pox, sheep-pox, and cow-pox), also commonly referred to as "sore head" or "warts" on the head, is very prevalent amongst fowls, turkeys, and pigeons in the Cape Colony. The author has seen quite a number of fowls suffering from the disease in the Cape Town district during the past two years, and Veterinary Surgeon Dixon states (private communication) that chicken-pox is common in the Eastern Province.

Says a recent writer to the *Cape Agricultural Journal*, "One of the most destructive diseases to which chicks are liable is sore head or chicken-pox, which is characterized by eruptions on the head and face taking the form of warts, and if neglected, generally causing the death of the chicks."

In the *Agricultural Journal* for 1905 (vol. xxvi., No. 2, pp. 168-170) was published a letter from the owner of a large flock of turkeys asking for advice in regard to this particular disease. In the course of his communication, the writer mentioned that "hundreds of young turkeys about Stellenbosch and Paarl die each year from 'warts.' Quite 10 per cent. of my young turkeys," he says, "become more or less affected with 'warts' every season, and this is the average condition of the young turkeys reared in the district. The time of the year when the disease first appears is from the end of September to the end of January. They begin to appear," he continues, "on turkey chicks about the first moult or a little earlier. The smallest birds up to eight weeks old do not become affected, but from that age up to about the time when the fleshy spots show up on the head and neck, the 'warts' appear."

"I have never seen an adult turkey with 'warts' nor even a breeding hen, although her chickens may have been affected." (This may be explained by the fact that one attack of the malady confers on the subject after recovery immunity against subsequent infection with the same disease. The adult turkeys in this case had no doubt acquired immunity in this way, having suffered from chicken-pox at some earlier period of their existence.)

The correspondent continues: "The growths appear as hard warts, and increase in size for some weeks if not treated; the parts affected are the head, almost any part from the head to the top of the neck, and also the joint of the leg, and I have seen them between the toe joints. I have not seen a wart on the body of any birds."

On several occasions the writer had seen common turtle-doves affected with the disease, which he refers to as "warts"—presumably the same disease (epithelioma contagiosum). He also mentions

another peculiarity of the disease as seen in turkeys. He says: "I rear hundreds of fowls, and they intermix freely with the turkeys, but I have only had two affected with these 'warts,' and they were adult birds." It is well known that a somewhat similar state of affairs prevails in the case of epithelioma contagiosum in the pigeon. In a series of experiments conducted by two German investigators, it was found possible to transmit the disease from pigeon to pigeon, and from pigeon to fowl, but the disease occurring in fowls appeared to be non-contagious for the pigeon; fourteen attempts which were made to transmit the disease from chickens to pigeons resulted in complete failure. In another experiment a fowl was successfully inoculated with the pigeon disease, and from the fowl infected in this way attempts were made to transmit the malady back to pigeons, but again the experiment was unsuccessful. These experiments clearly demonstrate that the causal agent of fowl-pox adapts itself very quickly to the particular species of bird on which it may have become implanted, changing in such manner (even after only one passage) as to lose its power to infect any other than the one species.

Fowl-pox or epithelioma contagiosum, as the name implies, is a highly contagious disease occurring frequently as an epizootic amongst fowls, pigeons, turkeys, geese, and other birds. It is characterized by the presence on the unfeathered or only scantily feathered portions of the skin of a number of firm "wart-like" outgrowths of the epidermis. These growths occur especially on the comb, face, wattles, eyelids, skin surrounding the eyes, the openings of the ears, the base of the nostrils, and the angles of the mouth. According to certain observers, they may occasionally spread over the feathered portions of the head and neck, and they may also occur on the outer surface of the thighs, abdomen, under the wings, and in the vicinity of the cloaca. When first noticed, the growths appear as small, rounded, or oval, firm, shot-like tubercles, projecting above the surrounding swollen skin. Soon they increase in size; they may bleed, and are very often covered with a dirty-looking brown or brown-red crust. The "warts" in some cases remain discrete—isolated one from another—and attain the size of a pea or bean, but, on the other hand, they not infrequently are arranged in masses of varying size, in which case they appear as "mulberry-like" warty growths, covered with crusts, and showing a number of knob-like projections on the surface.

When the growths form on the eyelids and on the skin surrounding the eyes, it is not unusual for the tumour masses to entirely cover the surface of the eye, and in this way to interfere more or less completely with vision—in such cases there is usually an accompanying conjunctivitis, which tends still further to aggravate matters. In the course of about three or four weeks the growths may shrivel up and fall off, after which event the bird is immune against subsequent infection with the same disease. No scar remains at the site originally occupied by the warty mass. In some cases the lesions extend, and may make their appearance on the mucous membrane of the mouth and throat. It is these cases which furnish the highest number of fatalities.

On the mucous membrane the first change observed is reddening and swelling, "the centre of which becomes yellowish in colour, undergoes caseous degeneration, and is surrounded by an inflammatory zone. The swelling soon increases in size; its surface becomes

covered with a whitish-yellow exudate presenting the appearance of a diphtheritic false membrane."

From this description it is apparent that the throat lesions, when such occur, resemble to some extent those seen in another disease, namely, avian diphtheria (commonly termed diphtheritic roup), in fact one observer formulated the theory that avian diphtheria and epithelioma contagiosum are one and the same disease. This idea, needless to say, is quite erroneous; it is true that the two diseases may occasionally be co-existent in the same subject, but as Fally has shown, they are distinguished from each other by the fact that avian diphtheria assumes a chronic course, and when inoculated experimentally, the blood from diphtheria-infected fowls does not transmit the disease to healthy ones, whereas fowl-pox attacks not only the mucous membrane, but also the skin, it is characterized by the presence of wart-like growths on certain portions of the latter (comb, &c.), and moreover when the blood of birds suffering from fowl-pox is inoculated into healthy susceptible subjects, it unfailingly induces in them the typical disease with the appearance of warty growths in the usual position.

At the *post-mortem* examination of birds which have succumbed to natural infection with chicken-pox, beyond the lesions already described as present on the unfeathered portions of the skin, and those which may be present in the mouth and throat, lesions in other parts of the body are not usually encountered. Burnet has shown, however, that similar lesions may occasionally occur in the œsophageal mucous membrane, and there is no doubt that when extensive lesions of this nature are present, the inflammatory process may extend to and involve the intestines, such cases invariably run a fatal course.

The Histological Structure of the nodules shows marked thickening of the epidermis and infiltration of the dermis. The proliferating epithelial cells are markedly increased in size and show "in the most superficial cell-layers small homogeneous flakes or a homogeneous mass, which occupies the greatly bloated cell cavity and presses the cell nucleus aside. The changes in the cells of the mucous membrane are similar."

The recent researches of Marx and Sticker (1902) prove that the particles formerly referred to as gregarines, which are enclosed in the epithelium (so-called epithelial corpuscles, molluscum corpuscles, Guarnier's corpuscles) are no other than products of epithelial metamorphosis, which have been observed in other diseases (variola and molluscum contagiosum in man).

Burnet considers that the causal agent of chicken-pox is probably found in the diseased epithelial cells; he holds that the etiological factor of the epithelioma contagiosum is not necessarily invisible, it may, he thinks, be at least as large as the organism of bovine pleuro pneumonia. "These conclusions," says M'Fadyean, "are quite in harmony with the view first put forward by Borrel, and subsequently developed by Burnet and Lipschutz, that the minute, but still visible intracellular granules which can be demonstrated in impression and smear preparations from the lesions of epithelioma contagiosum (and also in like preparations from the lesions of human molluscum contagiosum) are the actual cause of the disease."

The wart-like growths which form on the comb and elsewhere on the skin of infected fowls invariably contain the active virus of chicken-

pox. By merely scarifying the skin of a fowl which has never had the disease, and rubbing it with one of the tumour masses from a diseased chicken, the lesions of epithelioma contagiosum unfailingly appear on the scarified area after a period of incubation of five or six days; it matters not whether one has utilized for the purpose of inoculation quite recently formed nodules or scabs from a late stage of the disease, the result is the same in either case.

It has been shown by Burnet that the causal agent (virus) exists in the blood and internal organs (such as the liver) of infected birds, and this observer succeeded in transmitting the malady to susceptible subjects by inoculating them with the blood, or by causing them to ingest virulent material from diseased birds. This investigator successfully transmitted the disease by intravenous inoculation, the resulting lesions formed in the usual position. In the pigeon, by plucking the feathers from the breast and rubbing the denuded surface with juice from the warty masses from an infected pigeon, after the usual incubation period (five or six days) a nodule formed at each place from which a feather had been plucked.

Regarding the manner of natural infection, this would seem to take place by actual contact, and perhaps also by the ingestion of virulent material, scabs, &c., which have dropped from an infected bird.

Nature of the Virus.—In 1902 Marx and Sticker carried out a series of experiments with the object of determining the nature of the fowl-pox virus. Warty growths from natural cases of the disease in fowls were pounded in a mortar and an emulsion made with normal salt solution, this liquid subsequently being passed through Berkefeld and porcelain filters, which serve to retain all the microscopically visible organisms. The germ free filtrate obtained from the Berkefeld filter, when rubbed on the scarified comb of a healthy fowl, invariably caused the appearance of the characteristic warty growths after a somewhat lengthened incubation period. (The lengthening of the period of incubation may be explained by the high dilution to which the virulent material had been subjected prior to filtration, and the consequent scarcity of virus in the resulting filtrate liquid as compared with the amount present in the tumour masses; as we have seen, after direct inoculation with the latter, the inoculation period is only five days).

It is found that the finer porcelain filter did not allow of the passage of the causal agent of chicken-pox—*i.e.*, the filtrate was non-virulent when a fine porcelain filter was used. It is evident, therefore, that the causal agent of fowl-pox belongs to the group of filterable viruses, included in which group are the viruses of horse-sickness, small-pox, sheep-pox, swine fever, and several other diseases. It would seem, however, that the virus of chicken-pox is larger than that of some of the diseases just mentioned; it is apparently larger than the causal agent of horse-sickness for instance, the virus of which disease is able to pass through very fine porcelain and Berkefeld filters.

Resistance of the Virus.—Burnet found warty masses still virulent after an exposure to 60 C. for one and a half hours. Marx and Sticker placed some completely dried warty material from a case of fowl-pox in tubes, and exposed these for one hour in a steam sterilizer (100° C.) —the material afterwards proved virulent on inoculation. Scabs

from tumour masses were also exposed to the combined influence of desiccation, air, and sunlight in the window of a warm room; even two months of such exposure failed to destroy the virus.

In glycerine the virus retains its activity for one hundred and twenty days. Exposure of the scabs for half an hour to the action of a 2 per cent. solution of carbolic acid destroyed their virulence, but a 1 per cent. solution acting for the same length of time had no effect in this direction.

It is evident, therefore, that the virus of fowl-pox is of a very highly resistant nature.

Treatment.—On the occurrence of an outbreak of chicken-pox, all diseased birds should be isolated away from the healthy ones. The fowl houses should be thoroughly cleansed and disinfected, Jeyes' fluid, izal, carbolic acid, or other disinfectant being used for this purpose.

In the early stages of the disease the lesions should receive frequent applications of tincture of iodine, or a solution of cyllin (1 or 2 per cent.), or carbolic acid (4 or 5 per cent.). When the mouth and throat are affected it will be advisable to apply the cyllin solution directly to the affected mucous membrane; for this purpose one authority recommends the following formula :—

Creolin or carbolic acid... ...	5 parts
Glycerine...	100 ,,
Water	100 ,,

It is of course very necessary that the bodies of any birds which succumb to the malady should be burned, or deeply buried.

(*Agricultural Journal of the Cape of Good Hope.*)

ON THE EMPLOYMENT OF MORPHINE.

BY ZIMMERMANN (DEUTSCHE TIER. WOCH.).

MORPHINE is a very good narcotic in canine medicine, but on account of its action on the heart it should be employed cautiously on old and fat dogs. Binz and Fraenkel have shown that strong doses act only on the circulatory centre, and that blood pressure is never low enough to produce paralysis of the heart. At the present time morphine is employed in cases of nervous palpitation of the heart, even in adipose and dyspnœic invalids, and the results are excellent. Morphine ought not, therefore, to be considered a cardiac poison. Its elimination is by the digestive tube, even when administered hypodermically, hence its value in colic. But its chief action is on the encephalus, and more particularly on the sensitive and motor centres, not by anæmia and hyperæmia, but by the formation of an albuminate of morphine in the ganglion cells, which will no longer collect the nervous influx. In the horse, morphine has given good results in two cases of tetanus in 50 cc. doses morning and night.

(*Revue Générale de Médecine Vétérinaire.*)

Clinical Articles.

CANINE CYSTICERCOSIS.

BY S. N. MITTER, G.V.C.BENG., LECTURER ON PATHOLOGY IN THE BENGAL VETERINARY COLLEGE, THE RAYMOND RESEARCH LABORATORY, CALCUTTA, INDIA.

In 1907 a dog was admitted into the hospital in a very emaciated condition as a result of distemper. He one day suddenly died after a succession of epileptic fits. *Post-mortem* examination revealed thirteen cysts, varying in size from a large pea to a small areca nut, in the muscular substance of the heart. There were no other pathological changes in the body. While some of the cysts were being examined in the laboratory the carcase was, unfortunately, disposed of, hence no examination of the brain could be made. The cysts when gently crushed between two slides and examined under the microscope presented a scolex of a tapeworm with four rounded suckers and a double crown of an average of twenty-four to thirty-two hooks. The length of the larger hooks varied from 160 mm. to 180 mm., and those of the smaller ones from 110 mm. to 140 mm. These structures, according to Neumann, are absolutely the characters of the head of *Tænia solium*.

More recently another case has come to my notice in the Laboratory while conducting an autopsy on an English dog which died shortly after an operation for cancer. Three small cysts were discovered in the muscular tissue of the heart, two of which were situated on the external surface of the left and one in the myocardium of the right ventricle. The other organs were normal, but on opening the cranium I discovered another small cyst situated superficially on the left hemisphere.

The contents of these hydatids correspond in every respect with those of *Cysticercus cellulosæ*.

These cases are interesting because Professor Neumann, of the National Veterinary School of Toulouse, mentions in his classical work on Parasites and Parasitic Diseases that canine measles have been found in the muscles, liver and lungs (Leisering), liver and lungs (Roloff), liver (Caparini), muscles (Cornevin), and muscles, lungs, peritoneum, intestines, brain (Rivolta, Trasbot and Ralliet, Dufour, Gacon, Dupuy, Rivolta, Vagel, Seidamgrotzky, Lablanc, Lesbre, Dufour, Gacon, and Pirl have observed the localization of the cyst in the brain.

CONTAGIOUS VAGINITIS IN TWO COWS.

BY G. MAYALL, M.R.C.V.S., NORWICH.

A shorthorn bull recently obtained from Wiltshire served two cows on April 10. I was called to see the animals on the 16th, the owner stating that they whisked their tails and showed discomfort when making water. The cows, two cross-breds, were slightly off feed, uneasy behind, and the milk supply was somewhat decreased. On parting the labiæ and looking into the vagina I observed muco-purulent discharge and a few ulcers varying in size from the size of a shilling to that of a two-shilling piece, with purulent matter in their depths. I injected each vagina with mercuric iodide solution, about

Plate illustrating article on "Canine Cysticercosis."
By S. N. MITTER.

1 in 5,000, ordered similar injections twice daily, and gave the patients ½ lb. of mag. sulph. each as a drench. I isolated the two cows from the milking herd and forbade the use of the bull.

April 20.—Visited the farm again, found matters improved and animals more comfortable. Prescribed powders ℞ sod. bicarb. ½ oz. and pot. nit. ½ oz. in linseed tea twice daily as a drench. Continued the mercuric iodide injections.

April 26.—A few healthy-looking sores and fissures could still be seen in each vagina. Injections of pinol fluid solution, 1 per cent., were used and the powders continued in the food.

On April 29 the cows were practically well, but we kept them isolated a fortnight longer. I saw the bull (a roan shorthorn aged 3) once, and observed him making water, when he showed discomfort after the act, and the stream of urine came away slowly. I did not treat him, as the would-be purchaser returned him as a somewhat unfortunate speculation. I was told that the bull was a long time performing the covering act and that he dropped off the cows slowly and in a rather dejected way.

It is wise for the prospective purchaser of a bull to endeavour to see him perform if possible, as the farmer, in this instance, lost the use of a sire at a time when a number of his cows were coming in œstrum, and was put to considerable trouble and expense with the two affected ones.

THROMBOSIS OF THE POSTERIOR AORTA AND INTERNAL ILIAC ARTERIES IN A MARE.

BY J. F. CRAIG, M.A., M.R.C.V.S., PROFESSOR IN THE ROYAL VETERINARY COLLEGE OF IRELAND, DUBLIN.

THE subject was a stout bay mare in fat condition, aged about 19, which had been used for light trap work.

History.—The mare had been in the present owner's possession for the past eleven years. She had never been worked hard, and up to the present year had never previously been known to suffer from a day's illness. The symptoms of the affection from which she now suffered were first noticed about two and a half months ago. Then it was found that if put into harness and driven at a moderate pace she became so lame in half an hour that she had to be taken out of the shafts and put back into the stable. Then she would sweat sometimes profusely, and often show symptoms of colic. This condition was thought to arise from some renal trouble, but no improvement resulted from the treatment. The animal was admitted to the Royal Veterinary College of Ireland on March 8 last.

Symptoms.—When brought out of the stable the mare trotted nearly sound. If only put to walking exercise no symptoms were shown. When trotted or galloped for fifteen or twenty minutes she became lame behind, more particularly in the off hind. The lameness increased. Occasionally the animal knuckled over on her fetlock. In about half an hour she was hardly able to proceed further with safety to the rider. She looked as if she would fall on several occasions. At this time, in moving the hind limbs were raised in a peculiar jerking

or spasmodic fashion. The animal broke out in a profuse perspiration, but the sweating did not extend behind the level of the angles of the haunch. She was very uneasy and could not remain at rest. When put into the stable she lay down and rolled. After about an hour she became quiet and the symptoms disappeared. The following day the mare was tried again, and nearly the same symptoms were shown.

On rectal exploration very little definite was found. Pulsation was felt at the termination of the posterior aorta and the iliac arteries. Certainly the aorta did feel a little firmer than usual, but the firmness was not sufficient of itself to permit of diagnosis. I thought that the pulsation was not quite so distinct in the right as in the left external iliac artery. The urine was examined, but nothing abnormal could be found in it.

I came to the conclusion from the symptoms that the case was one of embolism or thrombosis of the posterior aorta or one of its terminal branches, and told the owner of the very slight chance of recovery. I advised rest and the administration of potassium iodide, or a trial of the mare at slow work. The owner, however, under the circumstances, considering the age of the patient, desired that the animal should be destroyed.

Accordingly the animal was killed on March 11 by pithing, and a *post-mortem* examination made immediately afterwards. The subserous fat was at places about 2 in. or even 3 in. thick. Probably this fat obscured the condition of the vessels on a rectal examination.

A thrombus was found in the last 3 in. of the posterior aorta, extending backwards thence for a distance of about 6 in. into both internal iliac arteries and their terminal branches. The thrombus in the posterior aorta was somewhat cone-shaped, flattened from above to below. The apex was directed forwards. It was attached to the upper aspect of the vessel only. It was widest at the origins of the external iliac arteries (here about 1½ in. broad), and a small projection passed into the lumen of each of these vessels. The thrombus was smooth on its free surface, slightly cross-striated, firm, and a yellowish brown colour.

In the aorta the thrombus was only partial. In the internal iliac arteries, illacofemoral, obturator, lateral sacral and gluteal, the thrombus occupied nearly the whole of the lumen of the vessels. It was difficult to separate the inner walls of the latter from the thrombus throughout a large portion of their extent.

The heart was hypertrophied, being 10 lb. 6 oz. in weight. Two or three small white areas, each about the size of a pea, were met within the wall of the left ventricle near the apex of the heart, probably the result of infarction. The interior of the heart was normal. On the outer side of one of the segments of the aortic semilunar valve were two small yellow nodules, each about the size of a pea, hard and calcareous, smooth on the surface. At the side of the opening of the left coronary artery were two nodules of similar size. Behind the opening of the right coronary artery in another of the sinuses of Valsalva were also noticed a thickening of a similar nature to the nodules about 1 in. long and ½ in. broad, as well as a small pedunculated nodule about the size of a split pea.

In the posterior aorta, on a level with the third aortic intercostal branches, another small pea-like nodule of a similar nature was found,

and last of all one rather smaller than these, but better defined, opposite the fourth aortic intercostals. No lesions in the anterior mesenteric artery, no sclerostomata, and no lesions in the bowels from worms or other agents could be discovered. A phlebolith about 4 in. long had developed in the direct colic vein over the first portion of the double colon. It was irregularly cylindrical in shape, very firm, even calcareous, was parti-coloured yellow and black. It was easily movable in the vessel. In the lungs a few blood spots (hæmorrhagic infarcts), each about the size of a bean, were present. A small area of interstitial pneumonia had affected the left lung opposite the heart.

Remarks.—(1) What was the cause of the condition? Thrombosis of the posterior aorta and its branches is not infrequently noted in the horse, but the exact cause is only sometimes clearly indicated. We usually associate it with sclerostomata and with aneurysms and thrombosis of the anterior mesenteric artery. In this case it would seem that one must look for some other causal agent. Probably the first lesions in the blood-vessels here were formed in connection with the commencement of the aorta, the result of some unascertained irritant, and an arteritis set up producing the nodules already noticed, which later became calcified. From this arteritis emboli were detached, which caused the infarctions noted in the wall of the left ventricle. An embolus detached may have been the direct starting-point of the large thrombus in the terminal portion of the posterior aorta and internal iliac arteries. It is possible that the infection may have come from the lungs through the seat of the interstitial pneumonia.

(2) With regard to the symptoms, Law remarks that "in chronic embolism of the internal iliac artery there is some indication of paresis of the tail, bladder, rectum, and anus. Impaction of the rectum is liable to occur." No such symptoms were shown in this case. Because of the powerful sphincter ani it was not at all easy to make a rectal exploration.

The specimen of thrombus is being preserved in the museum of the College.

AN INTERESTING CASE OF HYDROTHORAX: OPERATION AND RECOVERY.

BY F. T. G. HOBDAY, F.R.C.V.S., KENSINGTON, W.

THE patient, a greyhound, male, aged 6, was observed by the owner to be "out of sorts" and a little capricious in appetite, being readily fatigued after exercise. This occurred during the latter part of December of last year. Beyond that nothing was noticed for about a fortnight, when the respiration became perceptibly hurried and the dog languid and restless. Chronic pleurisy, with effusion of fluid into the chest, was diagnosed, there being no pyrexia; at times the dog's spirits were quite normal. Iodide of potassium was prescribed, the owner being very averse to surgical interference. This was at the end of January. On January 22 the patient was admitted to hospital. *Paracentesis thoracis* was performed on the right side on February 1, and 28 oz. of clear, straw-coloured fluid were removed. The respirations were relieved almost immediately, and within a few hours the patient ate a meal with evident relish. Doses of iodide of

potassium were given for about a week; the dog was kept quiet and fed with easily digested and nourishing food. Nux vomica was given for another three weeks until convalescence was well established, and the animal went home on February 19.

At the present time (June) the animal is quite well, and there is no suspicion of any return of the malady.

AZOTURIA OR HÆMOGLOBINURIA IN A GELDING.

BY G. MAYALL, M.R.C.V.S., NORWICH.

On April 20 I was called to a bay hackney gelding aged 5, and found him down in a loose box and unable to rise except with his fore legs. The owner stated he had been driving the animal at a quick pace, when he went down behind and was with difficulty brought into the stable.

Diagnosis.—Hæmoglobinuria; dose of physic given and liniment to the loins.

April 21.—Still unable to rise; passed the catheter and gave 2 oz. bicarb. sod. and ½ oz. aeth. nit. in ½ pint of water as a draught twice daily.

April 22 and 23.—Catheter passed and drenches continued; gelding still down.

On April 24 he had been up and stood for an hour, but when I saw him he was prostrate, so I passed the catheter again and emptied rectum.

On April 25 he got up and stood for two or three hours and made water himself.

On April 27 I had him walked out, when he went fairly well but dragged the off hind leg. Rubbed his quarter and loins with liniment and left six doses of mag. sulph. ½ oz. for him to be given in bran and linseed mashes.

On May 3 he was better and was re-dressed with liniment. From this time on he made an uninterrupted recovery.

This horse got up without slinging. The case was a bad one, the urine being very thick, dark coloured, and full of sediment; sodæ bicarb. appeared to be his salvation, and the owner expressed much gratitude for his cure, as he was a horse with splendid movement. The animal had been worked on April 19, but rested on the 18th.

UNILATERAL ATROPHY OF THE CROUP OF PROBABLE EMBOLIC ORIGIN.

BY M. L. MAGNIN, VETERINARY SURGEON TO 5TH ENGINEERS, VERSAILLES.

The horse Arrêt, No. 153, aged 12, of the first Artillery, was affected with partial paralysis of the anus, rectum and tail. The bladder fulfilled its function normally. In garrison life this infirmity caused no grave inconvenience; but during routes and manœuvres the rectal paralysis was accentuated, dung accumulated in the last portion of the digestive tube, colic occurred sometimes from this cause, and to relieve it the rectum had to be emptied.

From information it was gathered that the affection had been present for several years and the paralysis was the result of a fall on

the croup, which caused a fracture of the sacrum, of which there remained no apparent trace. The writer thinks there was no relation of cause and effect between this accident and what followed.

On September 7, 1902, Arrêt was taken with grave thrombo-embolic colic. After complete cure the horse, which had always maintained good condition in spite of his infirmity, had to be taken to hospital because in a period of eight days he had become very thin. He came into the infirmary on October 8 in a bad state. About fifteen days after entering he showed marked atrophy of the croup on the near side affecting the buttock muscles, and so he was cast.

He was sold for 60 francs on April 3, 1903. This modest price showed the advanced degree of the lesion, which however did not appear to cause much inconvenience at the walk.

The photograph was taken about a month before sale by my friend M. Carreau, Veterinary Director of the Dijon Abattoir. I have always thought that the atrophic lesions were due to arterial embolus. It is important to note that they followed an attack of grave thrombo-embolic colic, a frequent affection among horses of the corps; at the same time one has observed other accidents of the same etiological nature, such as intermittent lameness or rupture of an aneurism, which give weight to the hypothesis.

(*Revue Générale de Médecine Vétérinaire.*)

Abstracts and Reports.

INOCULATION OF SHEEP AGAINST BLUE-TONGUE AND RESULTS IN PRACTICE.[1]

BY DR. A. THEILER.

My last annual report contained particulars regarding the inoculation of sheep against blue-tongue, and gave the results in practice for that year. These results were very encouraging, and arrangements were made to meet all requirements for the year 1907-08; the necessary instructions for use together with a memorandum giving the names of the firms willing to supply syringes and the prices charged were distributed to all applicants, and by February, 1908, over 80,000 doses had been issued to the Transvaal farmers, whilst over 100,000 doses were distributed amongst other South African Colonies. Considering the number of sheep in the Transvaal the issue does not seem very high, but it must be remembered that last season was not a severe one for blue-tongue, and many farmers refrained from vaccinating on this account. It is a peculiar fact that the majority of farmers waited for the disease to break out before vaccinating their flock, notwithstanding our repeated directions to the effect that the vaccine has no curative value on animals suffering from blue-tongue. The absence of heavy rains last season appears to corroborate our theory that the carrier of the blue-tongue micro-organism is a biting insect which requires water for its development.

It has been impossible to collect statistics with regard to 1907-08, although with but few exceptions, which are detailed hereunder, no untoward reports have been received, and the results of the vaccine have proved eminently successful.

Loss of Condition.—This would appear to be the only complaint that can be brought against the vaccine, and, even then, one that can be easily prevented. The vaccine was introduced into practice for the first time in February, 1907, and was discontinued in April. It was reintroduced in October, 1907, although the bulk of the material was applied for in November and the three following months. The vaccination undoubtedly pulls sheep down in condition slightly in the same way as a natural attack, and those vaccinated after December would have to recover from the reaction under adverse climatical and grazing conditions. It is therefore advisable for sheep to be vaccinated early in the spring so that they would be able to thoroughly recover during the summer months, and be in good condition to withstand the winter.

Abortion.—Some instances of abortion which occurred amongst vaccinated ewes were reported from the Cape Colony and Heidelberg and Volkrust districts. Although the number of cases of abortion were below 15 per cent. the matter was of great importance, and a full investigation was made. The reports to hand showed that the rams were put to the ewes about a month before latter were vaccinated. Cases of abortion commenced within a month from the date of vaccination, and some dead lambs were thrown at the usual lambing

[1] This article and those following by Dr. Theiler are abstracted from his Annual Report to the Transvaal Department of Agriculture.

time. With regard to these dead lambs in all cases they were not full grown.

On first sight it would appear that the vaccine exclusively was responsible, but it must be borne in mind that these are only a few cases out of some 220,000 sheep that have been vaccinated, and even admitting that the vaccine was perhaps incriminated in some way or other, I am of opinion that another agency must have been acting at the same time.

Numerous other farmers vaccinated their sheep after they were put to the ram without any mishaps, and in the Heidelberg District a farmer reported that the ewes commenced lambing directly after vaccination, and continued right through without any untoward results. (Another farmer insisted that the vaccine caused the majority of his ewes to give birth to twins!)

For the future, however, it would be advisable to avoid running all possible risks, and the instructions for the ensuing season will be amended; the flock should be vaccinated about a month before turning the rams amongst the ewes.

Diarrhœa.—In the Orange River Colony a case was reported where amongst a flock of vaccinated sheep a few died showing all the lesions of blue-tongue, and, in addition, those of diarrhœa. In this instance it is difficult to say whether diarrhœa was only a symptom of blue-tongue, as in very severe cases of this disease such may sometimes be the case. It is, however, more likely that at the time of the blue-tongue reaction the sheep were suffering from some intestinal complaint which, together with the reaction, caused the deaths. It must be expected that when a large number of sheep are inoculated all kinds of coincidences may occur, and it is sometimes difficult to say whether deaths in such instances are due to the coincidental complaint alone or to the concurrent blue-tongue reaction.

Loss of Wool.—The question has been raised whether the vaccine causes sheep to lose their wool, and if so, the argument naturally follows that it is better to lose sheep from the disease itself than to vaccinate and suffer heavy losses owing to the poor quality and low price obtained by the sale of the wool. I have not received any reports to this effect, and I do not consider that any apprehensions need be felt on this score if my recommendations are carried out, as no such case occurred here on the station amongst our vaccinated sheep. At the same time, it stands to reason that as the vaccinated sheep pass through an attack of blue-tongue and show signs of illness, even though slight, the growth of the wool may be retarded, and this would naturally be more pronounced the later in the summer the sheep were inoculated.

Dipping.—A few losses have been observed in cases where sheep have been dipped for scab whilst undergoing or shortly after the blue-tongue reaction. It has to be expected that under these conditions one or the other animal will develop more severe reactions, and the effects of this, in conjunction with the dipping, may be responsible for deaths.

General.—In conclusion, I wish to emphasize one or two points upon which some farmers appear to labour under a misapprehension. All the vaccine is of one quality; that is to say, the material in one bottle does not pass sheep through a more severe reaction than that in

another bottle. If, on vaccinating the first twenty sheep, only slight reactions are noted, and yet when the whole flock is done about ten days later, severe reactions, and perhaps deaths, occur, some other agency must have been at work. It may be that between the two vaccinations blue-tongue has appeared, and in such cases the vaccine will not have any curative effect on those animals already in the incubation stage of the disease. This contingency can be avoided if my recommendations are carried out of vaccinating early.

Other cases occurred last season where the flock were affected with worms, and this, in conjunction with the vaccination, caused severe reactions and deaths. Again, sheep freshly introduced from other Colonies should not be vaccinated immediately after arrival, but first of all should be allowed to acclimatize.

As already pointed out, coincidences are possible and must be expected, and the greater the number of sheep vaccinated the more coincidences will naturally follow. If at the time of vaccination sheep are suffering from some invisible ailment it will be brought out by the reaction, which may develop into very severe symptoms of blue-tongue, so that an animal dies as a result of the vaccination. This can only be explained by accepting that the concurrent ailment is responsible for the development of the severe reaction. This opinion is based on (1) the observation that amongst the 897 sheep vaccinated at this laboratory, and of which very careful records were kept, no deaths occurred from the inoculation, the animals having been carefully selected, and were all in first-class condition when vaccinated; and (2) farmers state that as a rule the reaction from blue-tongue vaccine is not a severe one, and in most cases passes unnoticed.

It is our experience that where deaths occur amongst sheep shortly after, or even several months after, vaccination, farmers are inclined to attribute this mortality to the inoculation in some way or other. It is difficult to state in every particular instance whether any connection between the two is possible, but in the great majority of cases we can safely negative this idea.

FURTHER EXPERIMENTS WITH BILIARY FEVER OF EQUINES.

BY DR. A. THEILER.

In my last annual report a series of experiments were enumerated, the conclusion of which was that it was possible to inoculate with comparative safety susceptible horses, mules, and donkeys against equine piroplasmosis, and it was pointed out that in using the virus of the fourth generation and upwards of donkey foals the least mortality occurred. I therefore considered it safe to advise the inoculation for practical purposes. We were then approached by the Veterinary Officer of the South African Constabulary to carry out this inoculation, and as we were not inclined to let them accept all risks in introducing this inoculation, an arrangement was made whereby the inoculation was performed, free of charge, under our control at the stables at Daspoort; if the mortality from biliary fever exceeded 6 per cent. we were to pay compensation at the rate of £26 per head. The

South African Constabulary agreed to pay for forage. Altogether forty animals were handed over to us, and all these animals were inoculated with blood of a donkey foal of the fourth, fifth, or sixth generations, the dose being either 2 or 3 cc. The result was that all these animals showed reactions, and *Piroplasma equi* was noted in every instance.

In the majority of cases the reactions were mild, and no clinical symptoms could be noticed; in a few cases, however, the typical symptom of biliary fever, *i.e.*, the yellow discolouration of the mucous membranes of the eye was present, but the animals did not show any serious symptoms of illness, and recovered promptly. The experiment suffered one severe accident, inasmuch as three horses, shortly before delivery to the South African Constabulary, contracted horse-sickness spontaneously and died; the cause of this spontaneous horse-sickness can only be explained by the fact that at the same time horses were suffering from horse-sickness on the station, and some transmission might have been possible.

Later in the year the experiment was carried out on a batch of horses received from the Johannesburg Municipality; these animals had been imported from the Argentine at an earlier time, were constantly kept in the stables when not in harness, and only worked in the streets of Johannesburg, where an infection of biliary fever can be excluded. They were all treated in the same way as the South African Constabulary horses with blood of the fourth generation of donkey foals, the dose varying between 1 to 3 cc. The result of the inoculation was that all of them showed reactions, and the presence of piroplasms could be traced in the majority of cases; no animal died, neither did any animal show lesions as would indicate a serious illness.

The same strain of donkey foal virus of the fourth generation and upwards was utilized for the injection of seventy-six Argentine mules after they had passed through horse-sickness experiments on the station. These animals had been purposely imported from the Argentine in order to make quite certain that all possibilities of any immunity against horse-sickness or biliary fever could be excluded, and the inoculation proved satisfactory. The reactions were in every instance very mild. Piroplasms were noted in the majority of cases, and in such instances where they were absent it probably only meant that they escaped observation. The result, therefore, is that out of seventy-two horses and seventy-six mules inoculated with donkey foal blood of the fourth generation and upwards, none died of biliary fever; in other words, that the inoculation can be done with safety, and therefore can be recommended for practical purposes.

On adding these figures to those obtained last year, the result is that the inoculation of Argentine animals with donkey foal blood of the second to sixth generations caused no mortality amongst 173 animals. Nothing further remains to be done in the way of recommendations other than those pointed out last year; at the laboratory we now keep donkey foals free from tick infection for the purpose of immune blood should such be required in practice.

MILK, GUINEA-PIGS, AND THE LONDON COUNTY COUNCIL.

At the meeting of the London County Council on May 4 the Public Health Committee reported that 1,025 samples of milk had been examined under the General Powers Act of 1907 for the purpose of ascertaining whether tubercle bacilli were present. It had been found that the subcutaneous injection of material from 167 samples into guinea-pigs caused their death from some acute infection, the nature of which was not ascertained. These deaths made it impossible for the Lister Institute, which had carried out the investigation, to report whether the samples were tuberculous, but it was willing to continue its investigations for at least twelve months at a cost of £330, and the Committee recommended that this expenditure should be sanctioned. The recommendation was discussed in connection with the annual estimates, which contained an item in respect of the proposed expenditure.

Mr. Whitaker Thompson moved the deletion of the estimate. He doubted very much whether the Council had power to subsidise the Lister Institute in order that that institution might make experiments upon guinea-pigs. He found a seconder in Mr. Felix Cassel, K.C.

Mr. Gilbert Johnstone, Chairman of the Public Health Committee, said that on grounds of common-sense the experiments must be made. Some acute infection, the nature of which they did not quite know, was present in a considerable percentage of the samples. It might be that there was a worse danger in the milk than tuberculosis. The Committee felt that so grave a question must be dealt with as soon as possible. The amendment was lost, and the estimate was approved.

We are glad that the common-sense of the Council prevailed in this matter, as it is obviously of great public importance that further investigations should be carried out. At the same time, some explanation of the circumstances seems advisable to allay anxiety upon a report which appears very serious on the face of it. We understand that the reason why the early death of the guinea-pigs prevented the detection of tuberculous milk was that at the Lister Institute the result of a diagnostic inoculation is only pronounced negative when the animal has survived three weeks without developing any signs of tuberculosis, and that in these experiments the guinea-pigs died before this period of incubation had passed. The infection to which the guinea-pigs succumbed was of a somewhat complex nature which needs further research before a definite pronouncement can be made upon it, but in the meantime it should be pointed out that the inoculations were made with a highly concentrated centrifugalized deposit, and that deductions should not be drawn too hastily from the alarming results of these experiments upon guinea-pigs to the probable effect upon human beings of the consumption of the milk from which the material for inoculation was derived. At the same time it is essential that all possible formation should be obtained upon the substance or substances in the milk which killed the guinea-pigs, and the Council could not have acted more wisely than it has in leaving the investigation in the hands of the Lister Institute of Preventive Medicine.

(*Lancet.*)

NOTES ON MEAT INSPECTION.[1]

BY J. S. LLOYD, F.R.C.V.S., D.V.S.M.VICT., VETERINARY INSPECTOR, SHEFFIELD.

THE subject of my paper is such a wide one that it can only be very inadequately dealt with in the course of a single address. However, the matter is a very important one, both to consumers and producers of meat. In order to open up the subject, or to cover as much ground as possible, I will briefly consider the question before us from a number of points or aspects, hoping thereby to inaugurate a good discussion upon a subject which certainly deserves it.

OBJECTS OF MEAT INSPECTION.

The chief of these is the protection of the public against dangers arising from the consumption of diseased, unwholesome, or unsound meat. Diseased meat, of course, would come from diseased animals; consequently it is necessary that animals intended for slaughter for human consumption should be healthy. Meat may be unwholesome or unfit for food without being diseased, due to such changes as occur from accident, hæmorrhage, choking and suffocation, &c. Meat again may be unsound due to *post-mortem* changes such as putrefaction.

Another object of meat inspection is the prevention of fraud, such as the substitution of horse flesh for beef, goat for mutton, &c.

NECESSITY FOR MEAT INSPECTION.

It has been said that the health of a nation depends upon the purity and wholesomeness of its food supply, and when we remember that flesh meat forms a large part of the sustenance of our population, the great bulk of whom have not the simplest knowledge of sound meat, it is at once evident that meat inspection is an important matter to all sanitary authorities, whether central or local. One may here well ask the question, Is this important matter of meat inspection as thoroughly and efficiently carried out as it should be? The only answer is an unhesitating "No!"

THE LAW RELATING TO MEAT INSPECTION.

In England and Wales, Sections 116 to 119 of the Public Health Act, 1875, give power to sanitary authorities to have any animal, carcase, meat, &c., exposed for sale, or deposited in any place for the purpose of sale, or of preparation for sale, and intended for the food of man, inspected by their medical officer of health or inspector of nuisances. These officials may, under certain conditions, seize such animal, carcase, &c., which they think appears to be diseased, or unsound, or unwholesome, or unfit for the food of man, and carry it away to be dealt with by a justice, to have it condemned and destroyed, the owner or person in possession being also liable to a fine of £20 for each animal, carcase or piece of meat so condemned, or, at the discretion of the justice, to a term of imprisonment not exceeding three months. Section 18 of the Public Health Acts Amendment Act, 1890, applies the above sections to all articles intended for the food of man, whether liquid or solid. Under the Public Health (London) Act, 1891, Section 47, Sub-section 3, additional power is given to (London) local authority to prosecute the original

[1] Paper read before the Midland Counties Veterinary Medical Association.

vendor who sold condemned meat for the food of man, and which has subsequently been delivered up to the local authority by the purchasers.

In Scotland the subject of meat inspection is dealt with under the Public Health (Scotland) Act, 1897. This Act of Parliament is a great advancement upon the English Acts, as, in addition to giving veterinary surgeons approved for the purpose the same powers in regard to inspection of meat as the medical officer or sanitary inspector, it also empowers local authorities to appoint places within their districts for the examination of animals, alive or dead, and to appoint veterinary surgeons to examine such animals, and to pass or condemn the same as regards their fitness for human food. In such cases the veterinary inspector is exclusively recognized as the meat inspector. Further, if such veterinary inspector passes an animal or carcase as fit for human food, and grants a certificate to that effect, it protects the owner from any subsequent action that may be taken under the Act, providing that the examination was made a reasonable time prior to the seizure. (The only instance, I believe, in England and Wales where a veterinary surgeon as such is legally recognized as a meat inspector having equal powers with the medical officer or sanitary inspector is in Swansea, under the Swansea Corporation Act of 1902.)

Under the new regulations of the Local Government Board relating to foreign meat and unsound food made under the Public Health (Regulations as to Food) Act of 1907, all the responsibility of inspection is put upon the medical officer of health, power being given to the local authority to appoint him assistants, either medical or lay. The veterinary surgeon as such is not recognized or even mentioned. The assistant veterinary officer of health thought it was unfair and not to the public advantage to let the medical officer of health have all the power, well knowing he has not the time, and often not the ability to do the work. They therefore petitioned the Local Government Board for Scotland in favour of the veterinary surgeon being recognized, but the Local Government Board have refused to do so, and state that if appointed the veterinary surgeon must be subordinate to the medical officer of health. Until the veterinary profession is represented at the Local Government Board, and the Royal College of Veterinary Surgeons pushes the matter to the front, so long will the veterinary officer of health be made to take a back seat to the medical officer of health.

There is still, however, one respect in which the Public Health (Scotland) Act is unique, and that is under Section 34, where power is given to local authorities to erect public slaughter-houses and to borrow money for the purpose. Unfortunately there does not seem to be any provision for the compulsory abolition, with compensation, of private slaughter-houses. In Lord Donoughmore's Public Slaughter-houses Bill it was intended to remedy this, and similar powers were to be given to England and Wales and Ireland if the Bill became law.

Practice of Meat Inspection.

I can only in a very general way bring to your notice the routine and technical work of meat inspection met with in daily practice. It is always advisable that a meat inspector should see the living animal

previous to slaughter, but with the exception of animals killed in public abattoirs and occasionally when visiting private slaughter-houses, it is seldom that this can be done. Generally the meat inspector only sees the carcase some time after slaughter. If at a slaughter-house, the viscera may be present for examination, a point of great assistance to the meat inspector. In cases at wholesale meat markets, however, generally only the eviscerated and split or quartered carcase is presented, and then the meat inspector has to rely upon the physical character of the meat to be examined, *plus* examination of the lymphatic ganglia which have not been removed, and aided, if need be, by a further examination with the microscope.

In all such cases the general characters of the meat have to be taken into consideration. For instance, the proportion and distribution of fat, the colour, transparency, smell, moisture, consistency, and reaction of the flesh, the character or condition of the lymphatic ganglia, serous membranes, bones and articulations have to be considered, as well as such lesions as those resulting from parasites, abscesses, tumours, caseous masses or concretions. The colour of healthy meat depends upon the kind of animal, its age and sex, its state at time of slaughter, &c. Veal and pork are naturally lighter in colour than beef. On section a piece of well-set beef is a dark red colour, brightening rapidly upon exposure to the air. The flesh of bulls is a richer red than that of cows. Old animals have more fibrous tissue and less fat than young ones, although the same condition is seen in poor carcases. The fat should be proportionate, solid, and a good colour, yellowish to nearly white. The bones should not be red, and the joints should shine, be bluish in colour, and moist. The latter are a good index of disease, when opened often being caseous, opaque or bloody. Good flesh, well set, gives an elastic touch, but does not pit upon pressure, is dry on the outside, slightly moist on a fresh cut surface. If actually wet it indicates dropsy, and if sticky, fever. Dripping is a bad sign. In regard to bad smells, meat may acquire these in different ways, such as the smell of turnips when the animal has been choked by a turnip, the smell of drugs such as ether, turpentine, asafœtida, camphor, ammonia, which may have been administered previous to slaughter; the smell of urine when retention has occurred, and the smell of decomposition. The reaction is neutral at the time of death, becomes acid in a few hours, and alkaline when putrefaction sets in. The litmus paper test is thus a good one in cases of doubt, but when applying care must be taken to first moisten the paper with water to get a good result.

The position of the lymphatic ganglia should be well known to the meat inspector, as they are often the seat of characteristic lesions. In health each gland should be easily decapsulated, and on section should have a brownish red-coloured cortex with a paler hilum. In diseased carcases these glands are often the seat of hæmorrhage, or caseous or calcareous deposits, and are generally enlarged. The serous membranes require careful observation; a transparent smooth surface is normal. In disease they may be the seat of tuberculous growths, inflammatory deposits—pale, moist, or rough; often they are "stripped" and a coating of fat substituted.

If the meat inspector is present at the time of slaughter it is easy to examine the viscera as they are removed from the carcase by the

butcher, when their healthy or diseased condition is generally at once apparent. In examining carcases it is important that it be done in a good natural light, and often it is necessary to make the examination some time after slaughter, in order that the flesh should be allowed to cool, set, dry, and get a good marketable appearance.

In the case of suspicious carcases submitted for inspection it is often important to know if the animal has died a natural death before the carcase has been dressed. The conditions indicative of such cases are: absence of slaughter wound, fulness of the veins, moist character, and usually dark colour of the flesh, which rapidly begins to decompose. If the viscera are forthcoming the hypostatic condition of the lungs and the engorged condition of the liver are at once apparent. Generally, however, these are conspicuous by their absence, although it is the exception for the kidneys to be removed. The latter in such cases, if cut into and gently squeezed, will exude considerable quantities of blood from the cut surface,

Conditions of Meat demanding Condemnation.

As already pointed out, meat which is not derived from animals actually diseased has often to be condemned. For instance, the meat of immature calves, although probably not actually injurious, is inferior in quality and unfit for the market, and consequently has to be condemned. The flesh of emaciated animals may come under the same category, although, as a rule, emaciation is the accompaniment of disease rather than the withholding of food. Extreme old age of animals affects their flesh in a similar manner, and when accompanied by atrophy or dropsy the meat is quite unfit for food. Accidental injury may cause the part or a whole of a carcase to be unfit for food, from such causes as hæmorrhage, absorption of inflammatory products, &c., suffocation from hanging, choking by turnips and other causes, trampling in overloaded trucks, bruises caused in railway accidents or by bad shunting; these and similar conditions may render meat unfit for food and compel condemnation.

Deterioration due to bad keeping, the inconsiderate uses of preservatives, absorption of metallic substances, as from tins containing copper, lead, or zinc, are also conditions which compel meat to be condemned. Putrefactive changes may cause meat to become objectionable because of the bad smell produced, but a more insidious result is the production of poisonous alkaloids and toxins producing the serious condition known as ptomaine poisoning.

A very brief reference to the different diseases or diseased conditions which render meat unfit for human food, and so compel condemnation, will only be possible with the short time at our disposal.

Parasites.

Meat may become dangerous owing to contamination by certain parasites, and this may occur in two ways. The first is where meat being kept in infected and insanitary places becomes polluted by disease-producing parasites, as for example preparing pork pies in gut rooms, and making jellies in infected places. The second is where meat becomes affected during the life of the animal with parasitic diseases often communicable to man. The parasites causing

these diseases may belong either to the animal or vegetable kingdoms. The former include such diseases as psorospermosis or coccidia disease, due to infection by the *Coccidium oviforme* and seen chiefly in the liver of rabbits; distomatosis, usually seen in the livers of cattle and sheep and caused by the *Distomæ hepaticum* and *lanceolatum;* parasitic invasion of the lungs by different kinds of strongyles, causing broncho-pneumonia, pseudo-tuberculosis, and phthisis verminalis. Then we have the various cystic stages of different tape-worms, of which the most common are the *Cœnurus cerebralis* (*Tænia cœnurus*) occupying the brain cavity of sheep and causing sturdy or gid, the *Cysticercus cellulosæ* (*T. solium*) seen in the muscles of the pig and producing measly pork, the *C. bovis* (*T. mediocanellata*) seen in the tissues of cattle and producing measly beef, the *C. tenuicollis* (*T. marginata*) generally met with in the abdominal cavity, the *C. pisiformis* (*T. serrata*) met with in rabbits and hares, and the *Ecchinococcus veterinorum* (*T. ecchinococcus*) seen in the lungs and liver. Another parasite which may be mentioned is the *T. bothriocephalus latus*, the larval form of which is met with in different kinds of fish. The last I will mention is the *Trinchina spiralis* which infests the flesh of pigs (particularly in America and Germany), and which, with the beef and pork bladder worms, are most likely to be transmitted to human beings by eating infected meat. Of course, all meat infected with the three last-named parasites must be condemned, and whilst there is no certainty that some of the other parasites mentioned may infect man, in most cases they produce changes in the tissues such as hydræmia or dropsy, and jaundice or icterus, conditions which affect the nutritive value of the meat as food in addition to making it unmarketable, and so warrant condemnation.

The chief bacterial diseases, or diseases produced by vegetable parasites, are actinomycosis, anthrax, blackquarter, pyæmia, and tuberculosis. All these conditions are well known, and with the possible exception of anthrax, easily recognized. In all cases where anthrax is suspected it is imperative under the Anthrax Order to investigate the cause of death microscopically and without opening the carcase. Generally, in slaughter-house practice, however, it is not until an enlarged spleen is found that the butcher has any suspicions of anthrax being present. Carcases affected with anthrax, blackquarter and pyæmia should be totally condemned, whilst in cases of actinomycosis and tuberculosis, when the disease is localized it is often only necessary to condemn the affected parts.

Considerable confusion has for some time been connected with the examination of tuberculous carcases, and probably many valuable carcases have been unnecessarily condemned. The recommendations regarding seizure and condemnation given by the Royal Commission on Tuberculosis in 1898 have generally been taken as a guide, but some authorities consider them much too severe, and especially since Koch made his startling statement in 1901. Possibly, when the final report of the present Royal Commission is issued, some further light will be thrown on the matter, and probably some definite line of action recommended.

Other diseased conditions affecting the meat of animals as human food are the results of inflammation of various organs as the lungs, pleura, peritoneum, udder, uterus, &c., derangements of the stomachs and bowels, and conditions following parturition, such as milk fever.

It is in such cases that the meat inspector meets with what is known as emergency slaughter, and, owing to the fact that absorption of septic material from the parts affected into the system may have taken place previous to slaughter, the examination of these carcases becomes a very important matter. Owing to the flesh of such animals having been eaten when unfit, numerous cases of meat poisoning have been known to occur. It is in regard to such cases as these where I think veterinary inspection of the animals previous to slaughter should be insisted upon, and when animals are *in extremis* from any of the causes mentioned it is morally, if not legally, criminal to kill and dress such animals for human food. Generally speaking, the altered conditions from the normal of the organs (if present), the serous membranes, joints, and lymphatic glands will be sufficient to warrant condemnation of such carcases. Engorgement of the blood-vessels, hæmorrhages, extravasations, friability, moistness and stickiness of the flesh will often be present for guidance. Such carcases generally appear worse if kept, and putrefaction soon sets in. Two other conditions sometimes met with in meat inspection ought to be mentioned, and these are abscesses and tumours. Abscesses are generally local, but require careful excision to prevent contamination of the carcase, which can generally be passed. When multiple, or constituting the condition known as pyæmia, the carcase should be condemned. Tumours, if benign, should be treated in the same way as local abscesses—namely, carefully excised, and the carcase, if otherwise fit, passed. With malignant tumours the case is, however, different, and generally carcases so affected should be condemned.

In all cases of meat inspection there is one good rule which should always guide the inspector in cases of doubt. It is always best to err on the safe side. If the inspector is not satisfied in his own mind that the meat he is examining is fit to pass, then the only alternative is to condemn it, partially or totally, as the case may be.

Difficulties of Meat Inspection.

One of the difficulties often met with has already been mentioned, namely, the sending of carcases from the country *minus* the offal. Then there is the indiscriminate slaughter of animals in country districts, animals which may, and often are, only "killed to save their lives." Sometimes, indeed, carcases of animals are dressed for food after having died natural deaths.

Coming to towns and other thickly populated districts, the large number of private slaughter-houses undoubtedly tends to make the work of meat inspection more difficult. At dead meat markets, unless in conjunction with public abattoirs, the great quantity of meat to be examined in a short time often makes it difficult for meat inspectors to make the thorough examination they would like. In all such cases the obvious thing to do is to pass all unquestionably fit, and re-examine the questionable meat later. The advantages of this proceeding are that the examination can then be more thorough, and the meat, if bad, will have had time to go worse, which it would certainly do.

Advantages of Systematic Meat Inspection.

I think it will be admitted that the system of meat inspection general throughout the country is inadequate. In some of our large

towns—such as Edinburgh, Glasgow, and Manchester — no doubt meat inspection is carried out on rational lines, but in country places generally, and often in the poorer quarters of large towns, meat inspection is a farce. The Royal Commission on Tuberculosis in their report stated that *chaos* was the only word to adequately express the want of system prevailing as regards meat inspection.

Systematic inspection by properly qualified meat inspectors would not only safeguard the health of the public by preventing the consumption of diseased meat, it would also tend in the direction of efficient and uniform inspection, which is what all better class purveyors of meat desire, and probably remove that uncertainty which we now see existing in the fact that meat which is passed in one place would be unhesitatingly condemned in another.

Qualification of Meat Inspectors.

It is sometimes stated, and particularly by medical men, that butchers make the best meat inspectors. I suppose this is on the strength of the two old sayings, "set a thief to catch a thief," and "a poacher makes the best gamekeeper." From his practical knowledge it will be granted that an experienced butcher should know the physical appearances of good meat, but I would ask: Is he sufficiently educated in matters pertaining to the health of animals and man to be the judge of what is fit or unfit for human food? The two public officials entrusted with meat inspection in England to-day are medical officers of health and inspectors of nuisances. The chief duties of the latter are in connection with sanitation and matters relating to preventive measures against infectious diseases practically confined to human beings, the study and practice of which in no way qualify them for the post of meat inspectors. Medical men, on the other hand, are, of course, supreme in health matters connected with human being, and as such must have some say in the matter as to what human beings may eat without doing the consumers actual bodily harm. With regard to their knowledge of animal diseases, well, the less said the better. Of course there are exceptions, but I hardly know any class of educated professional men who know less of the A B C of animal everyday life. Often, however, their presumption in these matters outweighs their ignorance.

From what I have already stated about the characters of animals and their carcases, both in health and disease, it is apparent that the education and qualifications necessary for an efficient meat inspector must be extensive and of a high level character. Not only must he know "the signs of health and disease" in animals alive and after slaughter, in order to efficiently and uniformly inspect meat, safeguard the health of the public, protect the pockets of the ratepayers, and do no injustice to the trade interests of the butcher; he ought also to have an intimate knowledge of anatomy, physiology, and pathology, the latter to include chemistry, bacteriology and parasitology, and all as applied to animal life. Who fulfils these conditions? The only class of men who in their daily work have an intimate knowledge of animals in health and disease, who are trained both theoretically and practically in all branches of science just mentioned, and who have to pass a uniform examination in all, as pertaining particularly to meat inspection, are veterinary surgeons. Yet, with the exception of Scotland and one town in Wales, veterinary surgeons as such have no

locus standi as meat inspectors. To legally become such under the Public Health Acts they first of all have to be appointed inspectors of nuisances. This is not the case on the Continent of Europe, in the United States, or in our Colonies. In Germany, France, Italy, Spain, New Zealand, &c., efficient meat inspection is carried out by veterinary surgeons.

Inefficiency of Meat Inspection.

This is due to the following reasons: A scarcity of properly qualified meat inspectors; a want of knowledge in many present meat inspectors; the indiscriminate slaughter of animals for human food on unlicensed premises; the presence of private slaughter-houses in places where adequate inspection is impossible; the inadequacy of the law to always deal with owners of diseased meat. According to Justice Kennedy, an article of food is only liable to seizure (1) if it was intended for the food of man; (2) if exposed for sale; and (3) if unfit in the opinion of the inspector.

Improvements required in Meat Inspection.

What appears to be desired is some arrangement whereby the public may be assured that the meat they buy has been subjected to systematic and uniform inspection of a high standard by properly qualified meat inspectors. As to the qualification of the latter, it is gratifying to know that several towns now lay stress upon the necessity of employing veterinary surgeons for the work—the only class of professional men who, by their practical training and experience, are properly qualified for the purpose.

To ensure that all meat has been properly inspected several alterations in the existing law and procedure will be required.

(1) Inspection must be made compulsory, and to facilitate this it will be necessary for all animals to be slaughtered either in public abattoirs under the direct supervision of the meat inspector, or in licensed slaughter-houses from whence the carcase and offal must not be removed until inspected, passed, and marked. Indiscriminate slaughtering at farms and other unlicensed premises must be prohibited except in cases of accident or for home consumption, such slaughtering to be notified to the meat inspector, so that the meat can be examined before removal. Emergency slaughtering of sick animals should not be allowed until after examination by a veterinary surgeon and his granting a certificate that there is reasonable probability that the carcase will be fit for human food, and that there is no danger to the slaughterman, as there is, for example, in the case of anthrax. Heavy penalties should follow misdemeanour.

(2) Improved legal measures. Simple possession of diseased meat should be sufficient to warrant conviction of the possessor, unless he could prove that the meat was not intended for the food of man. The fact that diseased meat was dressed as for human food should imply that it was so intended, and there should be no necessity to prove exposure for sale to obtain a conviction.

(3) Provision of public abattoirs and gradual abolition of private slaughter-houses. In a few towns private slaughter-houses have been abolished; in these and many others public abattoirs have been erected. That both facilitate the better inspection of meat is un-

deniable, but both are costly to the ratepayers and more or less objectionable to the butchers. If public abattoirs are built, I am of opinion that they should be small in size and large in number, so as to be easily accessible to the butchers. Each should be in proximity to a railway siding and under the charge of a qualified meat inspector. Whether private slaughter-houses should be altogether abolished is also a matter of opinion. Annual licensing should certainly be required, strict sanitary arrangements demanded, and traffic in diseased animals or meat should confiscate the license. Strict enforcement of these measures, with a better staff of inspectors, would probably tend to prevent the use of such places for objectionable practices, and at the same time keep down the rates and be an advantage to honourable butchers who wished to use them. Private slaughter-houses in very thickly populated and out-of-the-way places should certainly be abolished.

(4) Systematic and uniform inspection by properly qualified meat inspectors. In practically every country practising meat inspection, except the United Kingdom, all the chief meat inspectors are veterinary surgeons, and to secure the above inspection, which both the public and the trade are demanding, it will be absolutely necessary to establish a proper system of veterinary meat inspection here. Owing to all British veterinary surgeons having to pass a similar examination in meat inspection, such a system will be the greatest guarantee of uniform inspection. Owing to their practical training in animal diseases, chemistry, anatomy, histology, pathology, and bacteriology, there is no doubt but that veterinary surgeons are an easy first as fit and proper persons for meat inspectors—a guarantee that veterinary meat inspection, whilst being of a high standard, is also practical and reasonable.

The establishment of a proper system of veterinary meat inspectors, in my opinion, is a matter for Government execution. To ensure general inspection a large staff of inspectors is required. The men appointed to do the work should receive adequate salaries and be free from private practice. Superintending inspectors should be appointed for counties and large cities, the branch officers being also concerned with the veterinary inspection of dairies and under the Diseases of Animals Acts, being, in fact, veterinary officers of (animal) health working in conjunction with medical officers of (human) health.

CATTLE DISEASE IN CEYLON.

THE year began badly for cattle owners owing to the prevalence of rinderpest, which has caused great loss, chiefly in the province of Uva, and is still causing the veterinary department much anxiety. The constant menace which daily importations of cattle from India have been to the health of our local stock has now been practically removed by the opening of a central cattle mart and segregation camp in Colombo. The establishment is presumably the first of its kind in the East, and is well equipped and under good management.

(*Report of the Ceylon Agricultural Society for* 1908.)

Reviews.

DISEASES OF THE DOG AND THEIR TREATMENT. By Dr. George Müller. Translated by Alexander Glass, A.M., V.S. Second Edition. Published by Baillière, Tindall and Cox. Pp. 419, fully illustrated. Price 21s. net.

The second edition of Dr. Glass's translation of Müller's "Diseases of the Dog" is a considerably larger volume than the first, and many notes of interest which have been inserted by the translator have added considerably to its value. Until quite recent times canine work has been held in the background, only a few practitioners specializing in this alone; but nowadays the importance of this branch of veterinary science is becoming more and more recognized, and the need for text-books is being felt. The first edition of Glass's translation supplied a long-felt want to English and American readers, and the fact that a second edition has been required shows that it has been appreciated.

There are now recognized to be so many ailments from which canine patients suffer that it would be utterly impossible in any one volume, even of the size of the present one, to find everything perfect, and it has been a good idea on the part of the translator to elaborate upon the ideas of the original author, Dr. Müller. The combination and criticism of two such keen observers is very valuable, and both have been very fair and courteous in acknowledging work done by others. Both are busy men, and to have searched the veterinary periodicals for contributions and summaries must have taken up much valuable time; at the same time, it is an indication of the broad-mindedness of their views. To those who are interested in canine work, whether students or practitioners, we have no hesitation in recommending this book as one which should not merely find a place in a book-case, but be kept at hand for everyday reference.

THE COMMON COLICS OF THE HORSE. By H. Caulton Reeks, F.R.C.V.S. Second Edition. Pp. xvi. + 261, with fifteen illustrations. Crown 8vo. Published by Baillière, Tindall and Cox, London, 1909. Price 5s. net.

When we reviewed the first edition of this very instructive little book, we advised our readers to avail themselves of the opportunity of adding to their knowledge of the many forms of colic. We have no hesitation in repeating the advice, as we consider it to be the best book we know on this particular subject. In this volume the author has added a chapter on "Subacute Obstruction of the Pelvic Flexure of the Colon," as the result of careful observations made on affected animals both during life and after death. The stimulant line of treatment for impaction of the colon as laid down by Mr. Reeks was received with some amazement at first, but it has met with so much success that we believe it has now become almost universally employed in Great Britain where that diagnosis has been arrived at.

There is an appendix which consists of three parts. The first part is on the composition and digestibility of various foods, and is from the pen of Mr. E. Wightman Bell, F.C.S., and is very instructive. The second part is on the use and abuse of sedatives in the treatment

of equine colics, and is in reality a plea for their more restricted use. The author's points are well argued, and worthy of serious consideration.

The third part of the appendix contains the most important modification of Mr. Reeks' previously recorded views. He was doubtful as to the advisability of using aloes in impaction, and preferred to rely solely on oils and stimulants. Since then Mr. Reeks has employed aloes, and has come to the conclusion that *moderate* doses of aloes may be used with advantage—a conclusion which we endorse.

Those of our readers who have not possessed themselves of a copy of this little book would do well to obtain one as soon as possible.

Personal.

Mr. James Douglas Stewart, M.R.C.V.S., Chief Inspector of Stock for New South Wales, has been selected by the Senate of Sydney University for the position of Professor of Veterinary Science at the University. Mr. Stewart qualified at the Edinburgh (Dick) College in 1893, and joined the Stock Department of New South Wales in 1898, being appointed chief in 1907. His new post will carry with it a salary of £900, with a pension of £400 per annum after twenty years' service. Mr. Stewart has our hearty congratulations. (See frontispiece.)

The degree of Doctor of Laws (*honoris causa*) has been conferred on Dr. Duncan McEachran, F.R.C.V.S., by the McGill University, Montreal. We are very glad to see Dr. McEachran's splendid work for the cause of veterinary science in Canada thus suitably rewarded. "Dr. Duncan McEachran was born in Campbellton, Argyllshire, Scotland, on October 27th, 1841. He was educated in his native town, and graduated at the Royal Veterinary College, Edinburgh, in 1861. Coming to Canada the same year, he lived for a time in Woodstock, Ontario, where he practised his profession, lecturing during the winter sessions in Toronto and at places adjacent. He aided in the establishment of the Toronto Veterinary College, but in 1866 he came to Montreal and founded the Montreal Veterinary College. Subsequently, on his recommendation, a quarantine station was established at Levis to prevent the importation of certain cattle diseases from England, and he was appointed by the Government the first inspector of stock at the cattle quarantine, in 1876. In 1879 he was despatched as a delegate to the United States to report on the lung plague existing in certain portions of the American Union. Canada is also indebted to Dr. McEachran for valuable services in connection with the initiation and development of the export cattle trade that has grown to such proportions. In 1889 he was appointed Dean of the Faculty of Comparative Medicine and Veterinary Science at McGill University, while he is one of the few men in Canada to-day who are Fellows of the Royal College of Veterinary Surgeons. He was veterinary surgeon to the Montreal Field Battery from 1871 to 1881. He has been a frequent contributor to scientific journals. He acted as expert judge of hackneys at the National Horse Show, New York, 1891-92, and was judge of thoroughbred horses at the World's Columbian Exposition, Chicago, October, 1893."—*Montreal Daily Witness.*

ROYAL COLLEGE OF VETERINARY SURGEONS.

Result of the Election of Council.

The first eight were declared elected :—

Professor W. Owen Williams †	931	Mr. Lloyd *	665
Mr. Shipley †	921	,, Spreull *	630
,, Mulvey †	905	,, McIntosh *	622
,, McKinna †	883	,, Storie *	605
,, J. McI. McCall † ...	881	,, Storrar *	579
,, Carter †	859	,, Wiltshire *	543
,, Slocock †	780	,, Barker *	539
Professor Shave †	771	,, Huston *	539

† Indicates a supporter of the proposed Bill.

* Indicates an opponent of the proposed Bill.

Fellowship Degree.

A meeting of the Board of Examiners for this degree was held on the 15th ult. at 10, Red Lion Square. Eight candidates entered for the examination, and all passed and obtained the diploma. The following is a list of the successful candidates, together with the titles of their respective theses :—

Whitehead, J. D., "Tetanus."
Foster, A. N., "The Veterinary Inspection of Dairy Cows with special reference to Tuberculosis."
Olver, Captain A., "Trypanosomiasis of Domesticated Animals in the Anglo-Egyptian Sudan."
Ryan, Captain H. T., "Bursati."
Gamble, Captain H., "Food Stuffs and their Deterioration."
Jolliffe, Captain C. Hylton, "Equine Biliary Fever (*Pyroplasmosis Equi*)."
Lenox-Conyngham, Captain H. M., "Calculi in the Horse."
Sutton, Guy., "Some Affections of the Urino-Genital Tract encountered in Town Practice."

The examiners were Messrs. J. Malcolm, W. Hunting, and Professor J. Macqueen; Mr. W. J. Mulvey being in the chair.

Fred Bullock, *Secretary.*

THE ROYAL SANITARY INSTITUTE.

At an examination for inspectors of meat and other foods, held in London, on May 21 and 22, thirty-five candidates presented themselves, and twenty-three were granted a certificate. The latter included two veterinary surgeons, viz. :—

Mr. S. J. Motton, M.R.C.V.S., Penzance.
Mr. G. M. Scade, M.R.C.V.S., Darvel.

FOOD CONGRESS AT PARIS, 1909.

The highly successful Congress in connection with the suppression of frauds in food, and which was inaugurated last year at Geneva, will be succeeded by a similar Congress to be held in Paris during October of the present year. The Congress is under the auspices of the Society of the White Cross of Geneva, which is so ably presided over by Mr. C. H. Vuille of that city, and it is contemplated that

the forthcoming Congress will far exceed in numbers present those who attended at Geneva. It may be remembered that these numbered about 400 delegates, representing twenty-nine different nations, and that the deliberations were followed with great interest throughout.

At the forthcoming Congress at Paris, the principal object will be to define such methods as will prevent the fraudulent adulteration of food, but there will also be sections devoted to chemical products, pharmaceutical preparations, mineral waters and similar substances. The list of foods alone, which will be discussed, is an imposing one, and includes all the various well-known products used in our domestic economy.

There will be two principal sections in connection with the Congress, namely—the technical section and the industrial one, and it will be for the adherents to those two sections to define clearly what purity of the various substances discussed really means. It is obvious, also, that the combination of technical and scientific men along with actual producers is likely to lead to clear and practical definitions.

The Congress will be of a highly important character to every one connected with the food supply; and it is anticipated that there will be a considerable representation of British interests in connection with the technology and science of the subject as well as in connection with agriculture and manufactures of food products.

It is desirable that those who intend to participate in the Congress, either by the appointing of delegates or as individuals, should make us their minds pretty soon so that proper arrangements may be made. Any other information can be obtained from Mr. Loudon M. Douglas, College of Agriculture, Edinburgh. The General Secretary is Mr. Robert Fazy, 42, Rue du Rhone, Geneva.

Translations and Extracts.

SPORADIC STOMATITIS PUSTULOSA IN HORSES.

BY CHIEF VETERINARY SURGEON BOCHBERG.

Five horses at the Imperial Brewery at Ratibor fell ill almost at the same time with an inflammation of the mucous membrane of the mouth, which was recognizable by pronounced diffuse redness and increased warmth. At the point and lateral surfaces of the tongue, at the gums, as well as the mucous membrane of the lips and lower jaw, there were numerous pustules, from the size of a hazel nut to a lentil, about 1 to 2 in. high, and surrounded by a whitish ring. I noticed no confluency of single pustules to ones of larger size. At their height the pustules showed a little depression full of purulent material. If rubbed they bled considerably, and so were hyperæmic. I saw them in small numbers later on in the course of the disease at the external skin of the lips, at the angles of the mouth, as well as in the nostrils and in the mucous membrane of the nose. On the eyes and the body no changes were visible. Whilst four horses were free from

fever and showed no special external flow of saliva, and consequently kept working, the fifth horse—a very heavy Styrian—showed a temperature of 39·7° C, diminished appetite and great flow of saliva. The animal was stopped working on March 2, and received easily digestible food and careful attention. The pustules on the mucous membrane of the mouth and external skin of the lips were healed in about fourteen days in the fever-free horses with 4 per cent. potossium chlorate irrigations, but in the fifth horse they remained unchanged. Here also there appeared to be difficulty in swallowing and breathing and frequent cough. On pressing the larynx the patient exhibited much pain. On March 13 colicky appearances suddenly occurred, which continued some days. The horse had an arched back, straddling gait, and showed pain on pressure over the loins. Urination more frequent than usual and painful, and the quantity diminished; the urine thick, slimy, and dirty whitish yellow; rectal temperature 39 to 39·8° C.; pulse accelerated. The horse showed kidney and bladder trouble. I gave calomel first, and then fol. uvae. ursi., and the bladder was injected with 1 per cent. potassium chlorate solution. By this treatment recovery was brought about by March 30, and previously healing of the pustules and pharyngeal affection had occurred.

The horses stood singly in a very roomy stable, so that the illness could scarcely have been spread by direct contact, saliva, and so on; also stomatatis pustulosa contagiosa had not been noticed in Ratibor until that time. By transmission of saliva to a horse of the dominion of Prawinck, I have not been able to produce inflammatory change in the mucous membrane of the latter. No infection of the stable attendants' hands or mucous membranes was noticed, although they were not at all cautious. Since mouldy and dusty clover hay was being used, it is assumed that the illness arose from this. The complication with bladder and kidney inflammation occurred through irritation of the urinary apparatus by the attacking fungi.

(*Berliner Tierärztliche Wochenschrift.*)

OVARIOTOMY IN THE GOAT.

BY P. J. OCEANN, PROFESSOR AT THE VETERINARY SCHOOL OF BUKAREST.

OCEANN performs ovariotomy in the goat whilst in the standing position, making a vertical incision 3 to 4 cm. long through the wall of the flank immediately under the external muscle of the ileum. He inserts the index and middle finger into the abdominal cavity, draws out the ovary, puts in a catgut ligature, and sews up the flank wound. The same procedure is undertaken on the opposite side.

The favourable conditions for the operation are: (1) Age, between 5 and 6 years; (2) Healthy state; (3) Time of the ovariotomy during the months of May and June, when milk secretion has reached its highest point. The operation has the following objects in view:—

(1) In order to cure the goaty smell of milk, ovariotomy is the simplest, least costly, and quickest method in its effect.

(2) In order to incite milk secretion and lengthen its continuance, which lasted on an average from thirteen to fifteen months in the goats operated on by Oceann.

(3) In order to favour fattening and profit on the flesh which becomes better in quality and without bad taste and goaty smell.

(4) In order to favourably influence the physiological milk-forming elements whilst the quality of butter and casein increases, the lactose is diminished.

(*Berliner Tierärztliche Wochenschrift.*)

THE RESULTS OE FIVE YEARS OF ANTI-TUBERCULOUS VACCINATION, AFTER BEHRING, IN THE DOMAIN OF SARVAR.

Since 1902 Behring's vaccination has been systematically practised in the domain in the following way: Calves appearing healthy and 2 to 3 weeks old are inoclated, and three months afterwards they receive a second inoculation. During one to two days before and six to eight days after inoculation, the temperature of the vaccinated animals is taken. At the end of the year 1908, the number of inoculated calves was 686. At the present time, the tuberculin test gives 6 per cent. of positive reactions, no other preventive measure being applied. The reactions are apportioned thus: Cattle, aged 5, 10 per cent.; aged 4, 13·8 per cent.; aged 3, 7·2 per cent; aged 2, 9 per cent. Formerly, animals aged 2 reacted to tuberculin in the proportion of 50 per cent. In a severely infected area a group of vaccinated animals was placed with other young cattle not vaccinated. Of seven vaccinated animals afterwards submitted to the tuberculin test one only reacted, and he had only been inoculated once; whilst among the non-vaccinated one animal only was found free from tuberculosis. Five other cattle not vaccinated reacted also.

Another group, comprising four subjects strongly immunized and several others vaccinated in the usual way, were submitted to an intravenous inoculation of a very virulent bacillus. The strongly immunized animals remained healthy, whilst among animals once inoculated three were found to be tuberculous.

The author concludes from these results that Behring's vaccination is the most sure procedure for the prevention of bovine tuberculosis, and that it is preferable to Bang's method. He thinks that perhaps vaccination can be advantageously combined with Ostertag's procedure.

(*Allatorvosi Lapok.*)

DIAGNOSIS AND TREATMENT OF PANCREATITIS.

BY DR. DREESMAN.

In spite of considerable difficulty, illness of the pancreas can be diagnosed as well as suspected. In acute pancreatitis, which is frequent in fat people and great potato eaters, there is colic with violent pain in the upper abdominal area. The patients are very weak, and eructate gally slime. Temperature near normal may be accompanied by considerable rise in pulse frequency; the upper abdominal area is

tympanitic. The demonstration of a tumour is difficult in corpulent people. Changes in the fæces help diagnosis in difficult cases, especially in chronic pancreatitis. Pancreatitis may almost certainly be diagnosed if undigested bits of muscle remain in the stools. Trypsin ferment in the stool may be detected by Müller's method. In chronic pancreatitis the pains are only slight; there is gradual weakness, due to insufficient absorption of nourishment. Acute pancreatitis is generally fatal; operative treatment gives the best chance. Of 118 cases in which laparotomy was performed, 55 per cent. ended fatally. In chronic pancreatitis pancreatin and pot. iodide may be given. In advancing illness also in these cases cure only results from operation.

(*Berliner Tierärztliche Wochenschrift.*)

PEMPHIGUS IN THE DOG.

BY HAUPTMANN AND DASCH, OF VIENNA.

(*Tierärztliche Zentralblatt.*)

A BULLDOG, aged 4, presents at the extremity of the prepuce a little wound which he frequently licks. It was thought to be traumatic dermatitis of no importance, and appropriate treatment was prescribed; eight days later the dog had become very thin. The skin of the inferior surface of the body and of the sides of the limbs was covered with about thirty circular spots, some of which are confluent. The places developed into well-defined vesicles, which itched and caused the dog to lick them without ceasing. The lesions, at first bright red, pass to reddish-blue and then brown. They secret a tarrish and yellowish liquid, which glues the hair of the neighbourhood. At the circumference of the wounds there are epithelial *débris*, the remains of bitten vesicles. Temperature 39·6° C.; appetite good.

During a month and a half the author tried in vain different local and general treatment. The eruption does not cease to gain ground, and finally all the skin takes a violety tint; it thickens, corrugates, and new vesicles appear even on regions already attacked. Itching persists, and in spite of liberal feeding the dog gets thinner. Temperature remains at a little below normal. Finally recourse was had to a mixture of equal parts of styrax and linseed oil, applied daily. The lesions disappeared rapidly, and five days later the skin had taken on its usual aspect. I do not ascribe the cure to the use of the styrax, for the illness was declining of itself. During the time the owner of the dog presented a vesicle on his left leg 6 cm. in diameter, treated by his doctor as pemphigus; he recollected that he had touched his naked leg on the skin of the ailing dog. Hauptmann describes a similar case; he cured his case with septoform. Ballart records a case of pemphigus in a cow transmitted to man.—G. M.

(*Revue Générale de Médecine Vétérinaire.*)

Books and Periodicals, &c., Received.

"Pure Milk and the Public Health," by Professor A. R. Ward, D.V.M., University of California, published by Messrs. Taylor and Carpenter, Ithaca, New York; "The Extra Pharmacopœia," thirteenth edition, Martindale and Westcott, published by H. K. Lewis, London; Proceedings of the Royal Society of Medicine; Sleeping Sickness Bulletin; Transvaal Agricultural Journal.

Letters and Communications, &c.

Professor J. F. Craig; Mr. Sutton; Captain Jolliffe; Mr. Whitehead; Captain Gamble; Secretary of the Royal College of Veterinary Surgeons; Dr. Mitter; Mr. Mayall; Mr. J. F. Uttley.

NOTE.—All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C. Telephone, 4646 Gerrard. Telegrams, "Baillière, London."

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